Test Specifications Distributor-Type Fuel Injection Pump

46

VDT-WPP 001/4 PEU 2,1 f 1

2. Edition

En

Testoil-ISO 4113

EP/VA 4/90 H 2250 CR 173-3
0 460 394 022

supersedes 5.75
company: Peugeot
engine: XD 4/90 (504 D)

Pre-stroke setting 0 mm (see also VDT-WJP 161/4, Suppl. 1)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1600	4,8 - 5,2	mm		-
1.2 Supply pump pressure	1600	4,5 - 5,0	kp/cm²		-
1.3 Full-load delivery without charge-air pressure	1400	37,0 - 38,0	cm³/1000 strokes		1,5
Full-load delivery with charge-air pressure	-	- - -	cm³/1000 strokes		-
1.4 Idle speed regulation	350	5,0 - 11,0	cm³/1000 strokes		3,0
1.5 Start	50	mind. 50	cm³/1000 strokes		
1.6 Full-load speed regulation	2300	21,0 - 27,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	700	2000	2050-2250 (2020-2280)
	mm	1,0-2,0 (0,7-2,3)	5,7-6,7 (5,4-7,0)	End (6,1-6,8)
2.2 Supply pump	rev/min	200	1600	2000
	kp/cm²	1,1-1,6 (0,9-1,8)	(4,3-5,2)	5,5-6,0 (5,3-6,2)
Overflow delivery	rev/min	500	1600	2250
	cm³/10 s	70-140 (65-145)	70-140 (65-145)	70-140 (65-145)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	2350-2400 (2330-2420)	10,0		
		2300		(20,0-28,0)	
		2200	33,0-35,5	(32,5-36,0)	
		1400		(36,5-38,5)	
		500	28,0-31,0	(27,0-32,0)	
	Stop	2250	0		
Idle stop	Full	660-800 (640-820)	0		
		350		(4,0-12,0)	
	Start	50	mind. 50		

A1

A1

Angle to the stop-plate		Pre-setting dimensions	
Pump	173-3	Pump	173-3
α	30 ± 4°	Dimension IV	1,0
β	52 ± 5°	Dimension V	25,0
γ	10 (+ 2-6°)		
δ	max. 50°		

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 SOF 2,5 n

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2100 R 22-7

0 460 494 189

supersedes
company Sofim
engine: 8 144.67.220

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1800	7,6-8,0	mm		
1.2 Supply pump pressure	1800	6,3-6,9	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	-		cm³/1000 strokes		
Full-load delivery with charge-air pressure	2000	37,5-38,5	cm³/1000 strokes		2,5 (3,0)
1.4 Idle speed regulation	370	8,0-12,0	cm³/1000 strokes		2,5 (3,0)
1.5 Start	2350	19,0-25,0	cm³/1000 strokes		
1.6 Full-load speed regulation	100	min. 55	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1800	2000
	mm	0,9-1,7 (0,6-2,0)	(7,1-8,5)	8,3-9,1 (8,0-9,4
2.2 Supply pump	n = rev/min	600	2000	
	bar (kgf/cm²)	3,2-3,8	6,7-7,3	
Overflow delivery	n = rev/min	2100		
	cm³/10 s	55-138 (40-153)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	max. 4,5		
	2350		(18,0-26,0)	
	2100	36,7-39,3	(35,7-40,3)	
	2000		(35,7-40,3)	
	1100	43,5-46,5	(42,7-47,3)	
	600	35,3-38,3	(33,8-39,8)	
switch-off				
Idle stop	370		(6,0-14,0)	
	420	min. 1,5		
	500	max. 3,0		
End stop	400	min. 3 7		
	480	32,0-38,0		

2.4 Solenoid — cut-in voltage: min. 10 V; test voltage: rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,4-5,7
MS	1,7-1,9
SVS	
A	
B	

Observations

A3

A3

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6p3
En 1. Edition

Testoil-ISO 4113

VE 6/12 F 750 R 139-1
0 460 426 065

supersedes –
company: MAN
engine: DO 226 MLE
102 kW/1500 1/min

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	700	4,3-4,7	mm		
1.2 Supply pump pressure	700	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	–		cm³/1000 strokes		
Full-load delivery with charge-air pressure	700	122,0-123,0	cm³/1000 strokes		4,0 (4,5)
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,5 (4,5)
1.5 Start	750	100,5-104,5	cm³/1000 strokes		
1.6 Full-load speed regulation	100	min.70,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	300	500	700
	mm	2,0-2,8(1,7-3,1)	3,2-4,0(2,9-4,3)	(3,8-5,2)
2.2 Supply pump	n = rev/min	300	500	
	bar (kgf/cm²)	4,2-4,8	5,2-5,8	
Overflow delivery	n = rev/min	300	750	
	cm³/10 s	42-83(27-98)	55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	800	max. 2,5	
	785	11,0-19,0 (10,0-20,0)	
	750	(97,5-107,5)	
	700	(119,5-125,5)	
	500	113,0-117,0(111,3-118,7)	
	300	102,1-107,1(100,9-108,3)	
switch-off			
Idle stop	350	(10,0-20,0)	
	400	1,5-9,5 (0,5-10,5)	
	430	max. 4,0	
End stop	180	min. 105,0	
	280	max. 110,0	

2.4 Solenoid — cut-in voltage
test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	–
KF	5,7-6,0
MS	1,0-1,2
SVS	
A	
B	

Observations
pushing electronagnet
24 V

A4

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 w1

1. Edition

En

Testoil-ISO 4113

PES 6 M 55 C 320 RS 156
RSF 315/2300 M 59-5
0 400 076 990
1- 5- 3- 6- 2- 4
0-60-120-180-240-300

supersedes
company Daimler Benz
engine OM 603
80 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) 20-22 Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,15-3,25	0,25(0,3)			
290	5,4-5,6	0,55-0,65	0,1(0,15)			

Set uniform delivery according to the values in ☐

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
13-17 (1)	min.7,0	220	50 (7)	10,6-10,8	2200	(12)	100	min. 20,1
(2)	5,4-5,6	290	(8)	7,8-8,2	2500	(13)	1800	10,9-11,1
(3)	4,2-4,4	360**	(9)	-		(14)	1000	11,3-11,4
(4)	-		(10)	0-1,0	2950			
(5)	1,5	620-720	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		
							Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2200	33,5-35,5 (32,5-36,5)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 (12a)
					290	5,5-6,5 (5,0-9,5)	1,0 (1,5)
			1000	31,5-32,5 (30,5-33,5)			(15)
					2500	22,0-26,0 (21,0-27,0)	2,5 See (3,0) Point 8 a (16)

Checking values in brackets

*ca. 2,6 less control rod travel than in Column 2

A5

1. ** Checking of idle-auxiliary spring; setting at n = 360 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 290 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

   - Control lever up against idle stop
     At n = 315 1/min, I = 1.8 A, control-rod travel = (12,6-14,0) mm, fuel delivery (32,0-40,0) ccm/1000 strokes.

     Note:
     If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

   - Control lever up against full-load stop
     At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

     Checking of starting:
     At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 6,0 V
2. Edition
En

Testoil ISO 4113

PES 6 MW 100/320 RS 1004
RQV 300-1150 MW 54
0 403 446 148
1- 5- 3- 6- 2- 4
0-60-120-180-240-300 ± 0,50 (0,75)

supersedes 10.84
company: Volvo BM
engine: TD 60 LLK
125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,5+0,1	9,6-9,8	0,35(0,6)			
300	5,0-5,1	1,0-1,4	0,35(0,55)			
1000	11,5+0,1		0,5 (0,7)			
700	10,7+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8				ca.14	300	5,0-5,1	1100	8,4-8,6
	1300	0-1,0					100	min.6,8	700	3,6-3,8
									300	1,0-1,5
ca.51	10,5	1190-1200								
	4,0	1245-1275				(3a)	320-450			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0,7 bar	100	130,0-140,0		
700	96,0-98,0	1190-1200*	1000	98,0-102,0		(127,0-143,0)		
	(94,0-100,0)			(95,5-104,5)	300	10,0-14,0		
			LDA	0 bar		(7,5-16,5)		
			700	82,0-84,0				
				(79,5-86,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1004 mit MW 54	0,38	0 0,45 0,70	10,8-10,9 10,7-10,8 11,3-11,4 11,5-11,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Note: Check magnet with 24 V.

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 IHC 7,6 h

3. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 500-1250 MW 2/312
0 403 476 014

supersedes 8.83
company IHC
engine DT 466 B
154,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,6+0,1	10,0-10,2	0,35 (0,6)			
500	5,4-5,5	1,9-2,3	0,35(0,55)			
1250	11,6+0,1		0,65 (0,7)			

DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca. 29	500	5,4-5,5		
					100	min. 19		
ca.53,5 +2,5 (2a)	1280-1300 = 10,6 1370-1380 = 4,0 1560 = 0,3-1,7							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
800	100,5-102,5 (98,5-104,5)		1250	102,5-106,5 (100,5-108,5)	100	140-180 (137-183)		
					500	19-23 (16,5-25,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

A9

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Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 IHC 7,6p1
1. Edition
En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 350-1250 MW 2/312-1
0 403 476 021
1-5-3-6-2-4 je 60°

supersedes
company IHC
engine DT 466 C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,2+0,1	8,1-8,3	0,35(0,6)			
350	5,7-5,8	1,9-2,3	0,35(0,55)			
1250	9,2-9,3		0,65(0,7)			
DHK 1 688 901 016 207+3 bar						
Fuel injection test tubing 1 680 750 008						

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.29	350	5,7-5,8	850	10,2-10,3
							100	min.19	1200	9,3-9,4
ca.57,5 +2,5 (2a)	1290-1300=8,2 1365-1375=4,0 1450=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
800	81,0-83,0 (79,0-85,0)		1250	74,5-76,5 (72,5-78,5)	100	140-180 (137-183)		
					350	19-23 (16,5-25,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- In unlocked state do not run at greater than n = 500 1/min.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 IHC 7,6p3

1. Edition

En

Test-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 350-1200 MW 2/312-2
0 403 476 022
1-5-3-6-2-4 je °60°

supersedes –
company IHC
engine DT 466 C
109 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	9,6-9,7	7,3-7,5	0,35 (0,6)			
350	5,7-5,8	1,9-2,3	0,35 (0,55)			
1200	8,9-9,0		0,65 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca. 29	350	5,7-5,8	1100	8,9-9,0
					100	min. 19	850	9,6-9,7
ca.55,5 ± 2,5 (2a)	1240-1250 = 7,9 1295-1305 = 4,0 1400 = 0 - 1,0							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
800	73,0-75,0 (71,0-77,0)		1200	68,5-70,5 (65,5-74,5)	100	140-180 (137-183)		
					350	19-23 (16,5-25,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

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Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Starting rejection speed of holding magnet greater than 500 l/min.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 IHC 7,6p

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 350-1250 MW 2/312-3
0 403 476 023
1-5-3-6-2-4 je 60°

supersedes
company IHC
engine DT 466 C
114 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,3-10,4	8,05-8,25	0,35 (0,6)			
350	5,7-5,8	1,9-2,3	0,35(0,55)			
1250	9,1-9,2		0,65 (0,7)			
DHK 1 688	901 016 207	+3 bar				
Fuel injection test	tubing 1 680 750 008					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 29	350	5,7-5,8	1150	9,1-9,2
							100	min. 19	850	10,3-10,4
ca.57,5 ±2,5 (2a)	1290-1300 = 8,1 1350-1360 = 4,0 1475 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat (Note. changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
800	80,5-82,5 (78,5-84,5)		1250	69,0-71,0 (66,0-74,0)	100	140-180 (137-183)		
					350	19-23 (16,5-25,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

A15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

IHC 7,6p

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution / difference mm (1)

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Starting rejection speed of holding magnet greater than 500 l/min.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 IHC 7,6k
En 3. Edition

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 415-1200 MW 2/313
0 403 476 015
DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes 8.83
company IHC
engine DT 466 B
158 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,1-12,2	11,2-11,4	0,35(0,6)			
415	5,1-5,3	1,6-2,0	0,35(0,55)			
1200	11,3-11,4		0,65(0,7)			
500	10,3-10,4					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.24	415	5,2	1100	11,3-11,4
					415	5,1-5,3	950	12,0-12,1
ca.51,5 ± 2,5 (2a)	1235-1255=10,3 1325-1335= 4,0 1475=0,3-1,7				100	min.19		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,9 bar		LDA	0,9 bar	100	140-180		
900	112,0-114,0		1200	105,0-109,0		(137-183)		
	(110,0-116,0)			(103,0-111,0)				
			LDA	0 bar	415	16,0-20,0		
			500	83,0-85,0		(13,5-22,5)		
				(81,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

A17

A17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1109 mit MW 2/313	0,28	0,57 0 0,90	10,8-10,9 11,5-11,8 10,3-10,4 12,1-12,2

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 IHC 7,6p4

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 350-1250 MW 2/313-3
0 403 476 030
1-5-3-6-2-4 je 60°

supersedes –
company IHC
engine DTI 466 C
160 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,95-4,05 (3,90-4,10) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	13,4+0,1	11,65-11,85	0,35 (0,6)			
350	6,3-6,4	1,8-2,3	0,35(0,55)			
1250	12,2+0,1		0,65 (0,7)			
500	11,4+0,1					

DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 24	350	6,3-6,4	800	13,4-13,5
									1250	12,2-12,3
							100	min. 19	840	13,4-13,5
ca.54 ± 2,5 (2a)	1290-1300 = 11,2 1390-1400 = 4,0 1470 = 0,3-1,7								1200	12,2-12,3

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 116,5-118,5 (114,5-120,5)		LDA 1250	0,9 bar 105,0-107,0 (103,0-109,0)	100	140-180 (137-183)		1,5-2,0 mm vor Stop
					350	18,0-23,0 (16,5-25,5)		
			LDA 500	0 bar 82,0-84,0 (79,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

A19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1109 mit MW 2/313-3	0,2	0 0,49 0,90	11,8-11,9 11,4-11,5 12,8-12,9 13,4-13,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Starting rejection speed of holding magnet greater than 500 l/min.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 IHC 7,6r4

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1121
RSV 500-1250 MW 2/312-5
0 403 476 047

supersedes:
company IHC
engine DTI-466 C
167 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,95-4,05 (3,90-4,10) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	10,9+0,1	10,6-10,8	0,35(0,6)			
500	5,4-5,5	1,6-2,0	0,35(0,5)			
1250	10,9+0,1		0,65(0,7)			
DHK 1 688 901 016/207 + 3 bar						
Fuel injection test tubing 1 680 750 008						

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 28	500	5,4-5,5		
							100	min.19		
ca.57,5 ±2,5 (2a)	1295-1305=9,9 1365-1375=4,0 1400=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
950	106,0-108,0 (104,0-110,0)		1250	108,0-112,0 (106,0-114,0)	100	140-180 (137-183)		
					500	16,0-20,0 (13,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

A21

A21

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Hinweise:

- Pumpeneinstellung nur mit Orig.-Überströmventil und IH-Schlauch mit Drossel 1.2 mm Durchmesser durchführen.
- FB-Anriß-Stophebel um 25 Grad Richtung Stop RW ≈ 9-12 mm (Leerweg vom Stophebel muß vorher überwunden sein).
- Im entriegelten Zustand darf nicht größer n = 500 1/min gefahren werden.
- Unteren Leerlauf an Anschlagschraube einstellen.
- Stopanschlag 1.5 - 2.0 mm vor Stop einstellen
- Hydr. Startverriegelung mit 1.5 bar Luft prüfen.
- Leerlaufzusatzfeder im oberen Leerlauf bei 4 mm RW berührend anstellen und 1 Umdrehung zurück.

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 IHC 7,6r5

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1121
RSV 450-1200 MW 2 A 313-1
0 403 476 024
DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes -
company IHC
engine DTI-466 C
175 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,95-4,05 (3,90-4,10) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring-pre-tensioning (torque-control valve) mm 6
900	12,3-12,4	12,2-12,4	0,35(0,6)			
450	5,7-5,8	1,8-2,2	0,35(0,5)			
1200	11,9+0,1		0,65(0,7)			
500	10,7+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 22	450	5,7-5,8	1200	11,9-12,0
							100	min.19	1150	11,9-12,0
ca.47,5 ± 2,5 (2a)	1240-1250=10,9								800	12,3-12,4
	1320-1330=4,0								600	12,3-12,5
	1400=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,9 bar		LDA	0,9 bar	100	140-180		
800	122,0-124,0		1200	118,0-120,0		(137-183)		
	(120,0-126,0)			(116,0-122,0)	450	18,0-22,0		
			LDA	0 bar		(15,5-24,5		
			500	91,0-93,0				
				(89,0-95,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1) :
RS 1121 mit MW 2 A 313-1	0.54	0 0.26 0.90	11.9-12.0 10.7-10.8 11.1-11.2 12.3-12.4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel ≈ 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 KHD 20,2 c

2. Edition

En

PE 8 P 120 A 620/4 LS 325 RSUV 250-800 P 10 A 318 R

supersedes 6.83

company KHD

engine BA 8 M 816

Komb.-Nr. 0 401 878 091

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je 45°±0,5°(±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9 (29,2-30,2)	0,5(0,9)			
250	6,0-6,2	2,0-2,6 (1,7-2,9)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.19	250	5,9	800	14,9-15,0
	X = 4,0						250	6,3-6,5	300	16,2-16,8
ca.53 (2a)	13,9	840-850					280-340 = 2,0		450	14,9-15,0
	4,0	860-910								
	1050	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Adjust according to the engine records.		840-850 *	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

B1

B1

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 IHC 7,6r3

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1121
RSV 450-1200 MW 2 A 313-2
0 403 476 025
DHK 1 686 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes -
company IHC
engine DTI-466 C 156,6 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,95-4,05 (3,90-4,10) mm (from BDC) RW=9-12 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,6+0,1	10,85-11,05	0,35(0,6)			
450	4,8-4,9	1,8-2,2	0,35(0,5)			
1200	9,9-10,0		0,65(0,7)			
500	9,0-9,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 30	450	4,8-4,9	1200	9,9-10,0
							100	min.19	850	10,6-10,7
									800	10,3-10,7
ca.59,5 (2a)	1260-1270=8,9									
+ 2,5	1355-1365=4,0									
	1400=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,9 bar		LDA	0,9 bar	100	140-180		
800	108,5-110,5		1200	102,5-104,5		(137-183)		
	(106,5-112,5)			(116,0-122,0)	450	18,0-22,0*		
			LDA	0 bar		(15,5-24,5)*		
			500	78,0-80,0				
				(76,0-82,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1121 mit MW 2 A 313-2	0.57	0 0.32 0.90	10,2-10,3 9,0-9,1 9,3-9,4 10,6-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- In unlocked state do not run at greater than n = 500 1/min.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 IHC 7,6r2

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1122
RSV 350-1050 MW 2/312-4
0 403 476 026
DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes
company IHC
engine DT 466
118 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,95-4,05 (3,90-4,10) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	10,2-10,4	0,35 (0,6)			
350 1050	6,2-6,3 11,9-12,0	1,3-1,7	0,35(0,55) 0,65 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0					ca. 19	350	6,2-6,3	1050	11,9-12,0
									700	13,0-13,1
							100	min. 19	600	13,3-13,6
ca.41 ± 3 (2a)	1090-1100 = 11,1 1155-1165 = 4,0 1200 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat Note: changed to ...)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
700	102,0-104,0 (100,0-106,0)		1050	91,0-93,0 (88,0-96,0)	100	140-180 (137-183)		
					350	13,0-17,0 (10,5-19,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 6,0 d 9
2. Edition
En

Testoil-ISO 4113

PES 6 MW 100/720 RS 1131
RQV 300-1300 MW 50-1
0 403 446 158
1-5-3-6-2-4 je 60°

supersedes 11.85
company: Daimler-Benz
engine: OM 366 LA
150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Fuel injection test tubing 1 680 750 008

Port closing at prestroke 3,70-3,80 (3,65-3,85) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,3+0,1	9,35-9,55	0,35(0,6)			
300	6,1-6,2	1,0 -1,4	0,35(0,55)			
600			0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1340	15,2-17,8				ca. 15	100	min. 7,6		
	1550	0- 1,0					300	6,1 -6,2		
ca. 52	11,3	1340-1350								
	4,0	1440-1470				③a	350-550			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 93,5-95,5 (91,5-97,5)	1340-1350*	LDA 600	0,7 bar 87,5-91,5 (85,5-93,5)	100	80,0-90,0 (77,0-93,0)		
			LDA 500	0 bar 56,5-58,5 (54,5-60,5)	300	10,0-14 (7,5-16,5)		
					100-220	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1131 mit RQV..MW 50-1	0,17	0,22 0 0,70	10,8-11,0 11,9-12,2 10,6-10,7 12,3-12,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 k 17

1. Edition

En

PE 6 P 120 A 320 RS 372-1 Y RSV 250-1100 P 5 A 508-2
Komb.-Nr. 0 401 876 311
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes–
company DAF
engine DKX 1160 243 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,4+0,1	18,4-18,6	0,5 (0,9)			
250	6,4-6,6	1,1-1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 24	250	6,0	850	11,6-11,7
	x = 5,0								400	11,6-11,8
							250	6,4-6,6	300	11,9-12,4
ca. 54 (2a)	10,4	1140-1150					640-700	= 2,0		
	4,0	1270-1300								
	1425	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar	1140-1150*	LDA 600	0 bar	100	315,0-355,0		
	183,5-185,5			135,5-137,5		(311,0-359,0)		
	(180,5-188,5)			(132,5-140,5)	250	11,0-15,0		
						(8,0-18,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 372-1 Y + RSV..P 5 A 508-2	0,70	0 0,37 0,30	11,4-11,5 10,0-10,1 11,0-11,1 10,5-10,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PES 6 P 120 A 320 LS 403 RQ 250/1100 PA 487 R
Komb.-Nr. 0 402 046 198
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 9.84
company: MAN
engine: D 2566 MKUL

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,0±0,1	21,5-21,7	0,5(0,9)			
250	6,3-6,5	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,4	100	min. 7,9	750	13,0-13,1
VH=max. 46°				4,0	1185-1215			250	6,3- 6,5	1100	11,3-11,4
				1300	0-1,0			335-375	=2,0	925	12,5-12,7
										1005	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,55 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
LDA	1,0 bar	-	LDA	0,29 bar	100	205,0-245,0
750	215,0-217,0 (212,0-220,0)		500	134,0-140,0 (131,0-143,0)		(201,0-249,0)
1100	177,0-183,0 (174,0-186,0)		LDA	0 bar		
650	206,0-212,0 (203,0-215,0)		500	111,0-113,0 (108,0-116,0)		

Checking values in brackets

1.86

B10

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES6P..LS 403 + RQ..PA 487 R	1,0	0 0,29 0,58	13,0-13,1 9,7-9,8 10,7-10,8 12,4-12,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 v 3

1. Edition

En

PE 6 P 110 A 320 RS 407-1 RSV 275-1000 P 5 A 508-7

Komb.-Nr. 0 401 876 307

supersedes:
company DAF
engine DKFL 1160
185 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,8+0,1	15,2-15,4	0,4 (0,75)			
275	7,0-7,2	0,9-1,4	0,45(0,75			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 25	275	6,6	600	13,0-13,1
	x = 5,0						275	7,0-7,2	1000	12,1-12,3
ca. 50 (2a)	11,1	1040-1050					700-760	= 2,0	790	12,6-12,8
	4,0	1195-1225							865	12,2-12,5
	1360	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 600	0,7 bar 151,5-153,5 (149,0-156,0)	1040-1050 *	LDA 1000	0,7 bar 136,0-140,0 (133,0-143,0)	100	245,0-285,0 (241,0-289,0)	0 -	-
					275	9,0-14,0 (6,5-16,5)		
			LDA 600	0 bar 137,0-139,0 (134,5-141,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

B12

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6P..RS 407-1 +RSV..P5A 508-7	0,70	0 0,30 0,26	12,8-12,9 12,1-12,2 12,6-12,7 12,3-12,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 10,5 b 1

1. Edition

En

PES 6 P 80 A 720 LS 425 RQV 300-1000 PA 577-1

Komb.-Nr. 9 400 087 285

supersedes-

company: Caterpillar

engine: 3306 BA 125 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
990	12,0+0,1	9,7-9,8	0,25 (0,4			
300	6,8-7,0	0,9-1,6	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1010	15,2-17,8	-	-	-	ca. 16	200	min. 11,9		
							300	6,4-6,6		
ca. 69	11,0	1020-1030					490-550	= 2,0		
	4,0	1090-1120								
	1180	0 - 1,0			220-370	(3a)				

Torque control travel s = 0,75 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed: rev/min (4a) 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
990	97,0-98,0 (95,5-99,5)	1020-1030 *	700	103,0-105,0 (102,0-106,0)	100	152,0-172,0 =17,6-18,6 mm RW	990	2,0+0,1
							850	2,2+0,3
							700	2,5+0,2
			500	101,0-103,0 (100,0-104,0)			500	2,7+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

B14

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 11,4 I 15

1. Edition

En

PES 6 P 110 A 820 LS 442-1 RSV 300-1100 POA 485-2
Komb.-Nr. 0 402 076 055

supersedes: -
company: Daimler-Benz
engine: OM 407
122 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	8,6-8,7	8,0-8,2	0,4 (0,8)			
300	7,7-7,9	1,4-2,0	0,4 (0,7)			
600	-	C, Sp. 4 u. 5	0,6 (0,9)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 28	300	7,8	1100	8,6-8,7
	X =								600	9,8-10,0
							300	7,7-7,9	750	9,4-9,6
ca. 54	7,6	1130-1140						**	950	8,8-9,0
(2a)	4,0	1170-1200								
	1350	0,3-1,4								

**Set idle-speed auxiliary spring at 2 mm control-rod travel

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat Note: changed to ...	(3a) Fuel delivery characteristics		Starting fuel delivery (5) idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	80,0-82,0 (77,5-84,5)	1130-1140*	600	75,0-79,0 (72,0-82,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

B15

B15

Test Specifications Fuel Injection Pumps and Governors

(1) NPP 001/4 CAT 10,5 a 3

1. Edition

En

PES 6 P 80 A 720 LS 456 RQV 350-1000 PA 609-5

Komb.-Nr. 9 400 087 325

supersedes –

company: Caterpillar

engine: 3306 T
150 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,65-1,75 (1,60-1,80) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
990	12,5+0,1	11,1-11,2	0,2 (0,3)			
350	6,7-6,9	1,0-1,7	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1010	15,2-17,8	-	-	-	ca. 17	250	min.11,0	325	0,5-2,0
							350	5,9-6,1	400	2,7-3,1
ca. 69	11,5	1020-1030					510-570	= 2,0	500	3,5-4,2
	4,0	1090-1120							800	6,1-6,6
	1220	0 - 1,0				300-400 (3a)			1010	8,5

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
990	111,0-112,0 (109,5-113,5)	1020-1030*	500	117,0-119,0 (116,0-120,0)	100	152,0-172,0 =17,6-18,6 mm RW	990	12,5+0,1
							500	13,5+0,1
			700	114,5-116,5 (113,5-117,5)			700	13,4+0,2
							850	12,8+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

B16

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 CAT 10,5 E

1. Edition

En

PES 6 P 80 A 720 LS 456
Komb.-Nr. 9 400 087 280

RQV 400-1100 PA 626

supersedes
company: Caterpillar
engine: 3306 T
170 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,65-1,75 (1,60-1,80) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,3+0,1	12,5-12,6	0,25(0,4)			
400	6,6-6,8	0,9-1,6	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 20	250	min.11,0		
ca. 69	12,3	1130-1140					400	5,8-6,0		
	4,0	1230-1260				350-450	530-580	= 2,0		
	1350	0-1,0				③a				

Torque control travel a = 0,50mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1100	125,0-126,0 (123,5-127,5)	1130-1140*	700	121,0-123,0 (120,0-124,0)	100	152,0-172,0 =17,6-18,6 mm RW	1100	13,3+0,1
							950	13,5+0,3
			500	119,0-121,0 (118,0-122,0)			700	13,7+0,2
							500	13,8+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MWM 11,8 a

1. Edition

En

PE 8 P 110 A 320 RS 467 RSV 350-1150 P 1/503
Komb.-Nr. 9 400 087 288

1- 8- 5- 4 - 7 - 2 - 3 - 6
0-30-90-120-180-210-270-300° ± 0,5° (± 0,75°)

superseded
company MWM
engine D 232 V 8

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,2+0,1	13,7-14,0	0,4 (0,75)			
350	6,4-6,6	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	350	6,0	1150	12,2-12,3
	x = 4,0								600	12,2-12,4
							100	min.19,0	400	13,4-14,0
							350	6,4-6,6		
ca. 57 (2a)	11,2	1190-1200					400-450	= 2,0		
	4,0	1235-1265								
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	136,5-139,5 (134,0-142,0)	1190-1200*	600	134,0-138,0 (131,0-141,0)	100	19,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 L
3. Edition

En

PE 6 P 120 A 320 RS 474 RQV 275-1200 PA 425-3
Komb.-Nr. 0 401 846 499
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.84
company: RVI
engine: MIDS 0620 30 168 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,9+0,1	14,8-15,0	0,5(0,9)			
275	5,7-6,0	0,8-1,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1270	15,2-17,8	-	-	-	ca. 12	200	min. 8,4	275	1,2-1,4
ca.65	11,6	1265-1275					275	5,7-5,9	400	2,9-3,4
	4,0	1380-1410							900	5,8-6,0
	1500	0-1,0				275-360 (3a)			1200	7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 151,0-153,0 (148,0-156,0)	1265-1275*	LDA 750	0,7 bar 139,0-145,0 (136,0-148,0	100	105,0-125,0 (101,0-129,0)	-	-
			LDA 500	0 bar 94,0- 96,0 (91,0- 99,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

RVI 8,8 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P .. RS 474 + RQV..PA 425-3	0,70	0 0,20 0,16	11,9-12,0 10,7-10,8 11,0-11,7 11,1-11,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 110 A 720/3 LS 477-2 RQ 250/1100 PA 685-1
Komb.-Nr. 0 402 036 054

supersedes-
company: MAN
engine: D 2866 UH/200
147 kW/2200 min^{-1}
MAN-Nr.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Difference cm^3/100 strokes 4	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,5±0,1	9,1-9,4	0,4(0,75)			
250	6,0-6,2	1,5-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	9,5 4,0 1300	1145-1160 1200-1230 0-1,0	250	6,1	100 250 370-410	min.7,6 6,0-6,2 = 2,0	1100 500	10,7-10,8 10,7-10,9

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: At 1145-1160 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm^3/-1000 strokes 2	rev/min 3	rev/min 4	cm^3/-1000 strokes 5	rev/min 6	cm^3/1000 strokes / Control rod travel mm 7
800	91,0-94,0 (88,5-96,5)	-	1100 500	103,0-107,0 (100,0-110,0) 81,0-85,0 (78,0-88,0)	100 250	110,0-130,0 (106,0-134,0) 15,0-20,0 (12,5-22,5)

Checking values in brackets

12.85

B21

Test Specifications Fuel Injection Pumps (1A) and Governors.

40

WPP 001/4 KHD 40,5 g 2

1. Edition

En

PE 8 P 130 A 920/5 RS 489 RSUV 300-750 P 8 A 322 R

supersedes –

company KHD

engine BA 16 M 816

Komb.-Nr. 0 401 878 132

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7

0 -75 -90 -120-210-225-315-345° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,7	750	15,0-15,
	X = 4,0						300	5,6-5,8	280	16,2-16,8
							300-350=2,0		450	15,0-15,
ca. 63 (2a)	14,0	790-800								
	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the test.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request. Pumps operates in tandem.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

B22

B22

②

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 10,0 f

1. Edition

En

PE 5 P 100 A 720 PS 491 RQ 300/1100 PA 269-1 R

Komb.-Nr. 9 400 087 329

1-2-4-5-3 je 72° ± 0,5 ° (± 0,75 °)

supersedes

company: Daimler-Benz

engine: OM 355-5
200 PS

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,7+0,1	12,5-12,7	0,35(0,6)			
300	8,1-8,3	1,7-2,3	0,35(0,55)			
600	-	C, Sp. 4 u. 5	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,4-13,9	600	13,6	11,7 4,0 1350	1145-1160 1190-1220 0 - 1,5	300	8,1	100 300 375-415 = 2,0	min. 9,7 8,0-8,2	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation at 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1100	125,0-127,0 (123,0-129,0)	-	600	117,0-121,0 (114,5-123,5)	100	150,0-170,0 (146,0-174,0)

Checking values in brackets

2.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

B23

623

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 PEN 7,1 b1
1. Edition

En

PE 6 P 110 A 320 RS 492 RSV 650-750 P4/421-2

Komb.-Nr. 0 401 876 314

supersedes
company Volvo-Penta
engine TJD 71 G
153 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,7+0,1	15,8-16,0	0,4(0,75)			
650	4,9-5,1	1,6- 2,0	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 32	650	6,1	-	-
	x = 2,25						650	6,0-6,2		
ca. 37 (2a)	12,7	750-755					660-700	=2,0		
	4,0	775-785								
	930	0,3-1,7								

The numbers denote the sequence of the tests

C: Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	158,0-160,0 (155,0-153,0)	750-755*	-	-	-	-	-	-
					650	6,0-6,2 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.86

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

B24

B24

PE 12 P 110 A 520 LS 838-1 RQ 750 PA 664
Komb.-Nr. 0 401 840 089
1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

supersedes–
company: MAN
engine: D 2542 MTE
283 kW/1500

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3+0,1	14,5-15,2	0,4(0,75)			
250	3,8-4,0	1,4-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,3 4,0 900	750-755 776-788 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
700	149,0-152,0 (146,5-154,5)	-	-	-	-	-

Checking values in brackets

12.85

C1

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 p
1. Edition
En

Testoil-ISO 4113

PE 12 P 110 A 920 LS 3081 RQV 300-1075 PA 588 supersedes

Komb.-Nr. 0 401 840 703 company: KHD

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12 engine: BF 12 L 413 FC

0-45-60-105-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°) 320 kW/2150 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075	11,2+0,1	13,0 - 13,4	0,4 (0,8)			
300	6,7-6,9	1,6 - 2,2	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca. 13	100	min.8,3	250	0,6-0,8
							300	6,7-6,9	525	3,5-3,7
ca. 65	10,2	1115-1125							800	5,8-6,0
	4,0	1175-1205				350-500			1075	8,1
	1300	0-1,0								
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1075	0,75 bar 130,0-134,0 (128,0-136,0)	1115 - 1125*	LDA 850	0,75 bar 129,0-133,0 (126,0-136,0)	100	130,0-150,0	-	-
			LDA 500	0 bar 82,0- 84,0 (78,0- 88,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

C2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 12 P..LS 3081 mit.. PA 588	0,75	0 0,35 0,23	11,2-11,3 9,2-9,3 10,4-10,5 9,6-9,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C3

En C3

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 g
3. Edition

En

US-PES 6 P 110 A 720 RS 3083 US-RSV 400-1050 P2/488-1

supersedes 11.85
company John Deere
engine 6466 A
168 kW

Komb.-Nr. 9 400 231 175

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,45-3,55 (3,40-3,60) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,4+0,1	14,7-15,0	0,4(0,75)			
400	6,6-6,8	1,4-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.3	400	6,2	1050	12,4-12,5
	X=						100	min.19,0	700	13,6-13,9
							400	6,6-6,8		
ca.45 (2a)	11,4	1095-1105					660-720	D=2,0		
	4,0	1185-1215								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	1,2 bar	1095-1105*	LDA	1,2 bar	100	156,0-176,0	400	6,7
1050	146,5-149,5		700	179,0-183,0		(152,0-180,0)		
**	(144,0-152,0)			(176,0-186,0)				
			LDA	0 bar				
			500	91,0-95,0				
				(88,0-98,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

C4

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
US-PES6P..RS3083 +US-RSV..P2/488-1	0		10,4-10,5
		0,66	12,9-13,0
		0,40	11,2-11,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

** Setting without torque-control spring retainer at 1 mm control-rod travel less. Raising of full-load delivery with torque-control spring retainer to 11.5 mm control-rod travel.

C5

En

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 FOR 6,6 d

1. Edition En

PES 6 P 110 A 720 RS 3157 RQV 350-1300 PA 788

Komb.-Nr. 9 400 087 353

supersedes

company: Ford (FTO)

engine: 6,6 L-TC 170 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,25-4,35 (4,20-4,40) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	13,0+0,1	12,5-12,7	0,5 (0,9)			
350	7,9-8,1	1,9-2,3	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel (1a) mm rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca. 15	100	min. 9,5	350	0,6-1,3
							350	7,9-8,1	500	2,3-2,7
ca. 64	12,0	1360-1370					620-680	=2,0	800	4,0-4,3
	4,0	1490-1520							1000	5,0-5,3
	1620	0 - 1,0				370-440 (3a)			1300	7,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1300	0,9 bar 125,0-127,0 (123,0-129,0)	1360-1370*	LDA 600	0,9 bar 83,0-87,0 (81,0-89,0)	100	100,0-120,0 (96,0-124,0)	-	-
					350	19,0-23,0 (16,5-25,5)		
			LDA 500	0 bar 60,0-62,0 (57,0-65,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.86

C6

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P.. RS3157 + RQV..PA 788	0,90	0 0,65 0,53	13,0-13,1 11,4-11,5 12,4-12,6 11,8-11,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 6,6 e

1. Edition

En

PES 6 P 110 A 720 RS 3158 RQV 350-1300 PA 787

Komb.-Nr. 9 400 087 354

supersedes -

company: Ford (FTO)

engine: 170 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,25-4,35 (4,20-4,40) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,6+0,1	11,3-11,5	0,5 (0,9)			
350	7,7-7,9	2,0-2,4	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca. 15	100	min. 9,5	350	0,6-1,3
ca. 62	10,6	1360-1370					350	7,7-7,9	500	2,3-2,7
	4,0	1470-1500					690-750	= 2,0	800	4,0-4,3
	1600	0 - 1,0							1000	5,0-5,3
						370-440 (3a)			1300	7,3

Torque control travel a = 0,50 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1300	112,5-114,5 (110,5-116,5)	1360-1370*	500	73,0-77,0 (71,0-79,0)	100	100,0-120,0 (96,0-124,0) = 20,0-21,0 mm RW	1300	11,6+0,1
							500	12,1+0,1
			900	101,0-106,0 (99,0-108,0)	350	20,0-24,0 (17,5-26,5)	900	12,0+0,2
							1050	11,9

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.86

C8

BOSCH Geschäftsbereich KN. Kundendienst. Kfz-Ausrüstung.
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C8

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 11,0 d 1
2. Edition
En

PE 6 P 110 A 320 LS 3805-10 RSV 650-1150 P 1 A 820-3
Komb.-Nr. 0 401 876 739

supersedes 4.85
company Daimler-Benz
engine OM 421
159 kW

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	12,1+0,1	13,0 - 13,2	0,4 (0,8)			
650	6,0-6,2	1,6 - 2,2	0,4 (0,7)			
975	-	C,Sp. 4 u. 5	0,6 (0,9)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-0,7		- - -	ca. 30	650	6,1	1180	12,0 -12,1
	x = 4,0				100	min.19,5	975	12,5 -12,7
ca.57 (2a)	11,1	1210-1220			650	6,0 -6,2		
	4,0	1240-1260			650 - 715	= 2,0		
	1350	0,3 - 1,4						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1180	130,0 - 132,0	1160-1170 *	975	130,0 - 134,0	100	140,0-160,0	-	-
	(127,5 - 134,5)			(127,0 - 137,0)		(136,0-164,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

C9

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,0 r 1
1. Edition
En

PE 6 P 110 A 320 LS 3814-10 RQ 300/950 PA 187-12
Komb.-Nr. 0 401 846 806

supersedes
company: Daimler-Benz
engine: OM 421
146 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testars

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	12,5+0,1	12,2-12,4	0,4(0,8)			
300	8,3-8,5	1,4-2,0	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,2	11,5 4,0 1200	995-1010 1045-1075 0-1,5	300	8,4	100 300 430-470	min. 9,9 8,3-8,5 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 995-1010 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
950	122,0-124,0 (119,5-126,5)	600	600	114,0-118,0 (111,0-121,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

12.85

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,0 q 5

1. Edition

En

PE 6 P 120 A 320 LS 3815-10 RQ 300/1150 PA 511-4
1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company: Daimler-Benz
engine: OM 421 A
184 kW
Komb.-Nr. 0 401 846 812

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,4+0,1	15,8-16,0	0,5(0,9)			
300	5,0-5,2	1,4-2,0	0,8(1,2)			
600 500	- -	C, Sp. 4 u. 5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,1-20,8	600	20,0	9,4	1195-1210	300	5,1	100	min.6,7	-	-
VH =	max. 46°			4,0	1250-1280			300	5,0-5,2		
				1360	0-1,5			360-390	= 2,0		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1195-1210 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA 1150	0,7 bar 158,0-160,0 (155,0-163,0)	-	LDA 600	0,7 bar 157,0-163,0 (154,0-166,0)	100	140,0-160,0 (136,0-164,0)
			LDA 500	.0 bar 139,0-142,0 (136,0-145,0)		

Checking values in brackets

12.85

C11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..LS 3815-10 + RQ..PA 511-4	0,70	0 0,34	10,4-10,5 10,1-10,3 10,3-10,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 17,4 c
2. Edition
En

PE 10 P 120 A 520/4 LS 3833 RQ 750 PA 663-7
1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 9.85
company: MAN
engine: D 2540 LE
352 kW

MAN-Nr. 2-7666
Komb.-NR. 0 401 849 721

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,2-4,3 (4,15-4,35) mm (from BDC) Cyl.10; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,0+0,1	22,9 - 23,1	0,5 (0,9)			
300	6,1-6,3	1,4 - 2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,3 4,0 950	750-755 790-803 0 -1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750 - 755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	229,0 - 231,0 (226,0 - 234,0)	-	-	-	-	-

Checking values in brackets

12.85

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/SCA 9,0 c
2. Edition
En

PE 6 P 120 A 320 RS 7103 RQV 200-1100 PA 712
Komb.-Nr. 0 402 746 801
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes 5.85
company: Saab-Scania
engine: DSC 901

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,5-4,6 (4,45-4,65) mm (from BDC) RW 6,0 - 8,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	17,8 - 18,0	0,7(1,0)			3,3 ± 0,1
225	4,6-4,8	1,5 - 1,9	0,3(0,6)			(3,0 - 3,5) **

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 8	100	min.6,1	225	0,8-0,9
ca.63	11,5	1140-1150					225	4,6-4,8	350	2,2-3,1
	4,0	1290-1320					290-350	=2,0	420	3,6-4,5
	1450	0 - 1,0							550	4,9-5,1
						③a			1140	8,6-8,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ③ intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 178,0-180,0 (175,0-183,0)	1140-1150 *	LDA 1100	0,9 bar 177,0-185,0 (175,0-187,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 138,0-142,0 (136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P .. RS 7103 + RQV .. PA 712	0,90	0 0,435 0,335	12,5 - 12,6 10,2 - 10,5 11,9 - 12,0 10,6 - 10,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-J-400/116
- For sealing, see VDT-J-400/117
- Test specifications approved by Scania on 4.10.1984
- Start of fuel delivery-engine: 15° v. OT
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 2,9 - 3,1 mm.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 GtS 18,0 d

En 1. Edition

PE 6 P 130 A 720 RS 7112 RQV 350/900 PA 760

Komb.-Nr. 0 402 046 826
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company: Guascor
engine: F 180 T, TA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,4 - 4,5 (4,35-4,55) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	13,3+0,1	29,9-30,2	0,6 (1,0)			
350	5,2-5,4	2,4-3,0	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	940	15,2-17,8	-	-	-	ca. 12	100	min.6,8	300	0,9-1,2
							350	5,2-5,4	700	4,7-5,2
ca. 62	12,3	940-950							900	7,7
	4,0	1005-1035								
	1150	0 - 1,0								
						355-455 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	299,0-302,0 (295,5-305,5)	940-950 *	-	-	-	-	-	-
					350	24,0-30,0 (20,0-34,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C16

Test specifications Fuel injection pumps and governors

PE 6 ZW 120/400 RS 27/2
PE 6 ZW 120/410/3 RS 28/2 RQUV 300-750 ZW 31

Replaces -
Firm: MTU
Engine: MMB 820

1 - 5 - 3 - 6 - 2 - 4 je 60° ± 0,5° (± 0,75°)

VDT-W-400/305 and instructions P. 2

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 mm (from BDC) Cyl. 1

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	336,0-342,0	10,0(15,0)	333,0-345,0	
600	6,0	79,0- 99,0	11,0(16,0)	75,0-103,0	
250	6,0	40,0- 56,0	10,0(15,0)	36,0- 60,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3 min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 85	750	21,5-23,5	-	-	-	ca. 19	270	11,0-13,0	-	-
	775	13,0-18,0					300	7,6- 8,0		
	800	5,0-12,0					325	5,0- 6,2		
	840	0- 3,0					350	4,8		
	865	0					400	3,3-4,3		
							540	0		

Torque control travel a - mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
-	not known	-	-	-	-	-

Checking values in brackets

2.86

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

Pump:

Furthermore, the customer requests that the control-rod projection at control-rod travel 0 mm be stamped into these pumps on the shutoff and max. delivery ends at the pump housing. These dimensions which must be stamped are measured as follows:

Set control-rod travel 18 mm (setting point of pump) with locking device, measure the projection of the control-rod end face at pump end 2, subtract 18 mm from the dimension measured; measure the projection of the control rod with mounted fork-shaped piece at pump end 1, add 18 mm to the dimension measured. Stamp these dimensions measured on the pump housing on the front side above the spring-compartment lid (dimension measured for pump end 1 near plunger-and-barrel assembly 1, and the dimension of pump end 2 near assembly 6). Size of the figures approx. 5 - 6 mm.

After removal of the locking device, with the control rod at shutoff position, the 0 dimension measured at pump end 2 must be obtained or fallen below!

In the case of pumps with a governor, measure and stamp in only the dimension at the drive end.

No plunger-and-barrel assembly must deliver more than 346.0 cm^3/1000 strokes or less than 332.0 cm^3/1000 strokes.

Governor:

The lower idle spring must be supported from beneath between its spring seats, and if necessary also the center spring under the outer spring seat, so that the governor values are obtained!

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 59,2 a 2
1. Edition
En.

PE 6 ZW 120/400 RS 54/2 RQUV 300-750 ZWA 31 L

1 - 5 - 3 - 6-2 - 4 je 60° ± 0,5° (± 0,75°)

VDT-W-400/305 and instructions P. 2

Replaces -
Firm: MTU
Engine: MMB 820

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 mm (from BDC) Cyl. 1

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	336,0-342,0	10,0(15,0)	333,0-345,0	
600	6,0	79,0- 99,0	11,0(16,0)	75,0-103,0	
250	6,0	40,0- 56,0	10,0(15,0)	36,0- 60,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3 min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 85	750	21,5-23,5	-	-	-	ca. 19	270	11,0-13,0	-	-
	775	13,0-18,0					300	7,6- 8,0		
	800	5,0-12,0					325	5,0- 6,2		
	840	0- 3,0					350	4,8		
	865	0					400	3,3- 4,3		
							540	0		

Torque control travel a= mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
-	not known	-	-	-	-	-

Checking values in brackets

2.86

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

C19

Pump:

Furthermore, the customer requests that the control-rod projection at control-rod travel 0 mm be stamped into these pumps on the shutoff and max. delivery ends at the pump housing. These dimensions which must be stamped are measured as follows:

Set control-rod travel 18 mm (setting point of pump) with locking device, measure the projection of the control-rod end face at pump end 2, subtract 18 mm from the dimension measured; measure the projection of the control rod with mounted fork-shaped piece at pump end 1, add 18 mm to the dimension measured. Stamp these dimensions measured on the pump housing on the front side above the spring-compartment lid (dimension measured for pump end 1 near plunger-and-barrel assembly 1, and the dimension of pump end 2 near assembly 6). Size of the figures approx. 5 - 6 mm.

After removal of the locking device, with the control rod at shutoff position, the 0 dimension measured at pump end 2 must be obtained or fallen below!

In the case of pumps with a governor, measure and stamp in only the dimension at the drive end.

No plunger-and-barrel assembly must deliver more than 346.0 cm^3/1000 strokes or less than 332.0 cm^3/1000 strokes.

Governor:

The lower idle spring must be supported from beneath between its spring seats, and if necessary also the center spring under the outer spring seat, so that the governor values are obtained!

En

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7 c 1

3. Edition

En.

PE 12 ZW 150/120 RS 1029 RQV 300-1200 ZWA 51 R

Komb.-Nr. 0 402 430 012

Replaces 9.85

Firm: MTU

Engine: 12 V 331

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

0-45-60-105-120-165-180-225-240-285-300-345 ° ±0,5 °(±0,75 °)

Note VDT-W-Allg./7 !

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Cyl. 12

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	501,0-511,0	15,0 (22,0)	498,0-514,0	
600	9,0	110,0-130,0	15,0 (22,0)	107,0-133,0	
300	9,0	46,0-72,0	10,0 (15,0)	43,0-75,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed				Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3	min⁻¹	Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	min⁻¹ 10	Control-rod travel mm 11
ca. 84	1200	18,0-19,0		ca. 27	375	8,0	ca. 21	300	8,0	-	-
ca. 84	1200	18,0-19,0		(max.30)	200	14,3-17,2		200	10,8-14,2		
	17,0	1205 -1225			300	10,3-11,3		400	3,9-5,0		
	4,0	1320-1380			500	2,5-3,7		485-590 = 0			
	1400	0 - 2,0			590-720 = 0						

Torque control travel a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min⁻¹ 1	cm³/1000 strokes 2	min⁻¹ 3	min⁻¹ 4	cm³/1000 strokes 5	min⁻¹ 6	cm³/1000 strokes 7
-	not known	300 Idle stop RW = 8,0 mm	-	-		

Checking values in brackets

12.85

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,4c 2

4. Edition En

Testoil-ISO 4113

VA 3/100 H 1100 CR 9-3
CR 9-4

DHK 1688 901 020

supersedes 3.76
company: IHC
engine: D 155 X 36
D 155-E 453

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,04

plunger lift of 1,0 mm related to outlet "A".

1. Settings

	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	3,2-4,0	mm		
1.2 Supply pump pressure	700	4,3-4,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	63,0-64,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	min .90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1150	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400	700	900-1050
	mm	0,9-1,9(0,6-2,2)	(2,9-4,3)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200	700	1100
	kp/cm²	1,8-2,3(1,6-2,5)	(4,1-5,0)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500		1100
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1200-1250	0		
		1150		(30,0-40,0)	
		1080	65,5-68,5	(64,5-69,5)	
		800		(62,5-64,5)	
		500	55,0-58,0	(54,0-59,0)	
	Stop	1100	0		
Idle stop	Full	430-500	0		
		300		(16,0-24,0)	
	Start	100	min .90,0		
end stop		220-300	min.95,0		

C22

C22

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4°$ $\beta = 45 \pm 8°$ $\gamma = 30 - 8°$ $\delta = 60 + 8°$	Pump Dimension IV 6,5 mm Dimension V 25,0 mm

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 16,0 c 1
2. Edition
En

PE 12 AM 80 C 610 RS 2005 RQV 200-1150 AB 479 DL

supersedes 4.85
company: KHD
engine: F 12 L 714 A

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12
0 -15 -60 -75 -120-135-180 -195 -240-255-300-315° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	7,4 - 7,8	0,4			
1000	9,0	3,9 - 4,7				
1000	15,0	10,3 - 11,4				
200	9,0	2,8 - 3,6				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.66	1150	15,0-18,0	-	-	-	ca.10	100	7,0-7,6	1150	8,3
	1180	11,8-15,5					200	4,3-6,6		
	1240	5,5-10,6					300	2,6-3,4		
	1300	0-6,0					500	1,2-2,6		
	1370	0					730	0		
						(3a)				

Torque control travel a = 1,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed: rev/min (4a) 3	Fuel delivery charscteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1130	71,5-73,5 (70,5-74,5)	1160-1180 *	600	74,0-77,0 (72,5-78,5)	100	min. 99,0	1150	0
			800	75,5-78,5 (74,0-80,0)			1000	0,3-0,5
							800	0,7-0,9
							600	1,2-1,4
							400	1,4-1,6

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

C24

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 BMW 2,4b
2. Edition
En

Testoil-ISO 4113

VE 6/10 F 2400 R 118
0 460 406 025
DHK 1 688 901 022
Fuel injection test tubing 1 680 750 073

supersedes 7.84
company: BMW-USA Ford
engine: M 21 D 24

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	6,5-6,9	mm	1,050	
1.2 Supply pump pressure	1500	5,9-6,5	bar (kgf/cm²)	1,050	
1.3 Full-load delivery without charge-air pressure	1500	40,5-41,5	cm³/1000 strokes	1,050	max. 3,0
Full-load delivery with charge-air pressure	500**	22,0-23,0	cm³/1000 strokes	0	max. 3,0
1.4 Idle speed regulation	400**	6,0-10,0	cm³/1000 strokes	0	
1.5 Start	2600	17,0-23,0	cm³/1000 strokes	1,050	max. 5,0
1.6 Full-load speed regulation	250**	35,0-37,0	cm³/1000 strokes	0	
1.7 Load-dependent start of delivery	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	1500	1500**	2000
	mm	3,8-4,6(3,5-4,9)	(6,0-7,4)	0	8,2-9,0(7,9-9,3)
2.2 Supply pump	n = rev/min	500		2300	
	bar (kgf/cm²)	4,4-5,0		7,2-7,8	
Overflow delivery	n = rev/min	500		2400	
	cm³/10 s	42-83(27-98)		55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	7,0-13,0	(6,0-14,0)	1,050
	2600		(16,0-24,0)	1,050
	2400	40,5-42,5	(39,2-43,8)	1,050
	1500		(38,7-43,3)	1,050
	750*	31,5-32,5	(29,0-35,0)	0,5
	500**		(19,5-25,5)	0
switch-off				
Idle stop	400**		(4,0-12,0)	
Exhaust gas recirculation driver	450**	max. 3,0		
Start Inspection point	850***	16,0-18,0(15,0-19,0)		
Limit stop	100**	27,0-37,0(20,0-42,0)		
	400**	28,0-38,0(25,0-41,0)		
	480**	19,2-23,8(16,5-26,5)		

2.4 Solenoid — cut-in voltage: min. 10 V; test voltage: rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,4-1,6
SVS	3,0
A	
B	

Observations
* LDA-stroke 7,5 mm
** Supply 12 volts to the solenoid valve
***Adjustment point for AGR back

D1

Pull control lever in full-load direction until gauge fits over drive hub and connection piece of housing cover. Measure fuel delivery.
(Do not apply voltage to solenoid-operated valve.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCL 9,5 a
En 2. Edition

PE 8 A 85 C/D 410 RS2281 EP/RSV 250-1100 A1 B524DL (1)
EP/RSV 250-1025 A1 B778DL (2)

supersedes 5.77
company: Schlüter
engine: SDM 110 W8 (1)
SDMT 110 W8 (2)

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je 45°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery "C" cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery "D" cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,1 - 5,5	0,4	9	4,2 - 4,5	
	6	1,3 - 2,1		6	0,7 - 1,4	
	15	12,1 - 13,2	-	-	- - -	
200	6	0,1 - 0,9		9	1,4 - 2,2	

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

524DL

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.50	1100	12,0	without auxiliary spring			ca.20	250	5,5	1080	0
	1130	8,0					150	19 - 21	600	0,6-0,8
	1150	5,0					250	5,2-5,8		
	1120	8,0-10,6					350	3,1-4,1	350	0,9-1,1
(5)	1150	3,5-6,0	with auxiliary spring				540	0-1		
	1250	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1100	68,5 - 70,5	1120			100	ca.20mmRW	250	5,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

Testoil-ISO 4113

D3

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.51	1025 1050 1080	12,0 8,4 3,6	without auxiliary spring			ca.20	250	5,5	1000	0
							100 250 350 520	19 - 21 5,2-5,8 2,8-4,0 0 - 1	400	0,9-1,1
(5)	1040 1100 1200	9,0-10,4 2,2-3,7 0,3-1,0	with auxiliary spring							

(1A)

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
1025	78,5 - 80,5	1065-1075 *	700 500 (6a)	83,5 - 86,5 75,0 - 78,0	100	ca.20mmRW	250	5,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

D4

D4

Fn

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 p2
1. Edition
En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-1
RSF 360/2300 M 59
0 400 074 954
1 - 3 - 4 - 2
0 -90 -180-270

supersedes –
company Daimler Benz
engine OM 601
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) 20-22 Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in [ ].

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm 2	rev/min 3	4	mm 5	rev/min 6	7	rev/min 8	mm 9
13-17 (1)	min.9,5	225	50 (7)	10,3-10,5	2200	(12)	100	min. 20,1
(2)	5,4-5,6	335	(8)	7,8-8,2	2500	(13)	1800	10,8-11,0
(3)	4,2-4,4	400**	(9)	-		(14)	1000	11,1-11,2
(4)	-		(10)	0-1,0	2950			
(5)	1,5	590-690	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 (12a)
					335	5,0-6,0 (4,5-9,0)	1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)			(15)
					2500	22,0-26,0 (21,0-27,0)	2,5 See Point (3,0) 8 a (16)

Checking values in brackets

*ca. 2,6 less control rod travel than in Column 2

D5

1. ** Checking of idle-auxiliary spring; setting at n = 400 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 335 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 $\pm$ 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

   - Control lever up against idle stop
     At n = 360 1/min, I = 1.8 A, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

     Note:
     If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

   - Control lever up against full-load stop
     At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

     Checking of starting:
     At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-1
RSF 360/2300 M 59-1
0 400 074 952
1- 3- 4- 2
0-90-180-270

supersedes

company Daimler Benz
engine: OM 601
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Note: Before starting testing, observe the important instructions on the reverse.

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) 20-22 Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
13-17 (1)	min.9,5	225	50 (7)	10,3-10,5	2200	(12)	100	min. 20,1
(2)	5,4-5,6	335	(8)	7,8-8,2	2500	(13)	1800	10,8-11,0
(3)	4,2-4,4	400**	(9)	-		(14)	1000	11,1-11,2
(4)	-		(10)	0-1,0	2950			
(5)	1,5	590-690	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		
							Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 (12a)
					335	5,0-6,0 (4,5-9,0)	1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)			(15)
					2500	22,0-26,0 (21,0-27,0)	2,5 See (3,0) Point 8 a (16)

Checking values in brackets

*ca. 2,6 less control rod travel than in Column 2

11.85

D7

1. ** Checking of idle-auxiliary spring; setting at n = 400 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
   Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 335 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

   - Control lever up against idle stop
     At n = 360 1/min, I = 1.8 A, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

     Note:
     If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

   - Control lever up against full-load stop
     At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

     Checking of starting:
     At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

(5)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 2,2 f1

2. Edition

En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-1
RSF 360/2300 M 60
0 400 074 950
1- 3- 4- 2
0-90-180-270

supersedes 3.85
company Daimler-Benz
engine: OM 601
54 kW
USA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Control rod travel 20-22

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	12,1+0,1	3,4-3,5	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in ☐.

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
8-12 (1)	min.9,5	225	50 (7)	11,3-11,5	2200	(12)	100	min. 20,1
(2)	5,4-5,6	335	(8)	6,9-7,3	2500	(13)	1800	11,7-11,9
(3)	4,2-4,4	400**	(9)	-		(14)	1000	12,1-12,2
(4)	-		(10)	0-1,0	2950			
(5)	1,5	590-690	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17)(18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	36,0-38,0 (35,0-39,0)	2500*	1800	36,0-37,5 (35,0-38,5)	100	min. 55	6,0 (12a)
					335	5,0-6,0 (4,5-9,0)	1,0 (1,5) (15)
			1000	34,0-35,0 (33,0-36,0)	2500	14,0-19,0 (13,0-20,0)	2,5 (3,0) See Point 8 a (16)

Checking values in brackets

*ca.3,2 mm less control rod travel than in Column 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

11.85

D9

D9

1. ** Checking of idle-auxiliary spring; setting at n = 400 1/min control-rod travel (4,1-4,5 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0,9-1,0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 48.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 335 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19,5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

   - Control lever up against idle stop
     At n = 360 1/min, I = 1.8 A, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

     Note:
     If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

   - Control lever up against full-load stop
     At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

     Checking of starting:
     At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

9. Checking the governor with ADA pressure unit

Speed in^{-1}	Pressure (absolute) mbar	Control-rod travel deduction from max. full-load control-rod travel (mm)
1000	930	0.1-0.5
1000	840	1.1-1.3
1000	700	2.3-2.7

10. Pin projection = 16.65 ± 0.05 mm

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-3
RSF 360/2300 M 59-6
0 400 074 930
1- 3- 4- 2
0- 90-180-270

supersedes_
company Daimler Benz
engine: OM 601
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) 20-22 Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm^3/100 strokes	cm^3/100 strokes	mm	cm^3/100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in [ ]. Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
13-17 (1)	min.9,5	225	50 (7)	10,3-10,5	2200	(12)	100	min. 20,1
(2)	5,4-5,6	335	(8)	7,8-8,2	2500	(13)	1800	10,8-11,0
(3)	4,2-4,4	400**	(9)	-		(14)	1000	11,1-11,2
(4)	-		(10)	0-1,0	2950			
(5)	1,5	590-690	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		Difference
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	cm^3/1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 (12a)
					335	5,0-6,0 (4,5-9,0)	1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)			(15)
					2500	22,0-26,0 (21,0-27,0)	2,5 See (3,0) Point 8 a (16)

Checking values in brackets

*ca. 2,6 less control rod travel than in Column 2

11.85

1. ** Checking of idle-auxiliary spring; setting at n = 400 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 335 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

   - Control lever up against idle stop
     At n = 360 1/min, I = 1.8 A, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

     Note:
     If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

   - Control lever up against full-load stop
     At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

     Checking of starting:
     At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-3
RSF 360/2300 M 59-7
0 400 074 932
1 - 3- 4- 2
0 -90- 180-270

supersedes _
company Daimler Benz
engine OM 601
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) 20-22 Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in ☐

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
13-17 (1)	min.9,5	225	50 (7)	10,3-10,5	2200	(12)	100	min. 20,1
(2)	5,4-5,6	335	(8)	7,8-8,2	2500	(13)	1800	10,8-11,0
(3)	4,2-4,4	400**	(9)	-		(14)	1000	11,1-11,2
(4)	-		(10)	0-1,0	2950			
(5)	1,5	590-690	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery idle		
							Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 (12a)
					335	5,0-6,0 (4,5-9,0)	1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)			(15)
					2500	22,0-26,0 (21,0-27,0)	2,5 See (3,0) Point 8 a (16)

Checking values in brackets

*ca. 2,6 less control rod travel than in Column 2

1. ** Checking of idle-auxiliary spring; setting at n = 400 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 335 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

   - Control lever up against idle stop
     At n = 360 1/min, I = 1.8 A, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

     Note:
     If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

   - Control lever up against full-load stop
     At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

     Checking of starting:
     At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

Testoil-ISO 4113

PES 5M 55c 320 RS 153
RSF 350/2300 M 55-6
0 400 075 978

1 - 2 - 4 - 5 - 3 je 72°

supersedes

company Daimler-Benz

engine OM 602
66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,10 (1,95-2,15) mm (from BDC) Control rod travel 20-22

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	11,3+0,1	3,15-3,25	0,25(0,3)			
350	5,4-5,6		0,1 (0,15)			
1800	10,9+0,2		0,25(0,3)			
2200	10,6+0,2		0,25(0,3)			

Set uniform delivery according to the values in ☐. Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel:	Rotational speed rev/min 8	Control rod travel mm 9
13-17	①	min.10,0	220	50	⑦	11,3+0,1	1000	⑫	100	min.20,1
	②	5,4-5,6	350		⑧	7,8-8,2	2500	⑬	1800	10,9-11,1
	③	4,2-4,4	400 **		⑨	-		⑭	2200	10,6-10,8
	④	-			⑩	0-1,0	2950			
	⑤	1,5	640-740		⑪			⑥	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑱a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2200	33,5-35,5 (32,5-36,5)	2500 * 7,8-8,2 mm RW	1800	34,0-35,0 (33,0-36,5)	100	min. 55,0	6,0	⑫a
			1000	31,5-32,5 (30,5-33,5)	350	5,0-6,0 (4,5-9,0)	1,0 (1,5)	⑮
					2500	22,0-26,0 (21,0-27,0)	2,5 (3,0)	⑯

Checking values in brackets

*ca. 2,3 less control rod travel than in Column 2

12.85

D15

1. ** Checking of idle-auxiliary spring; setting at n = 400 1/min control-rod travel (4,1-4,6 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 350 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. Setting the idle control-rod travel at PLA box

   Loosen correction nut when doing this.

8. Checking the pneumatic idle increase (PLA)

   At 0.4 bar vacuum n = 400 1/min, control-rod travel = (4,0-5,6 mm) delivery = (5,0 - 13,0 ccm/1000 strokes).

9. Leak test (vacuum test) on PLA box

   Apply 0.8 bar vacuum to PLA box. Permissible pressure drop 30 mbar in 15 sec.

10. FBG setting

    FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,5 e

1. Edition

En

Testoil-ISO 4113

PES 5 M 55 C 320 RS 153
RSF 340/2300 M 59-4
0 400 075 982
1- 2- 4 - 5 - 3
0-72-144-216-288

supersedes

company Daimler-Benz
engine OM 602
66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note: Before starting testing, observe the important instructions on the reverse.

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) 20-22 Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,15-3,25	0,25 (0,3)			
315	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in ☐.

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
13-17 (1)	min.8,0	220	50 (7)	11,3+0,1	1000	(12)	100	min. 20,1
(2)	5,4-5,6	315	(8)	7,8-8,2	2500	(13)	1800	10,9-11,1
(3)	4,2-4,4	380**	(9)	-		(14)	2200	10,6-10,8
(4)	-		(10)	0-1,0	2950			
(5)	1,5	630-730	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		
							Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2200	33,5-35,5 (32,5-36,5)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55,0	6,0 (12a)
					315	5,0-6,0 (4,5-9,0)	1,0 (1,5) (15)
			1000	31,5-32,5 (30,5-33,5)	2500	22,0-26,0 (21,0-27,0)	2,5 (3,0) (16)

Checking values in brackets

*ca.2,8 less control rod travel than in Column 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

1. ** Checking of idle-auxiliary spring; setting at n = 380 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 315 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

   - Control lever up against idle stop
     At n = 340 1/min, I = 1.8 A, control-rod travel = (12,6-14,0) mm, fuel delivery (33,0-41,0) ccm/1000 strokes.

     Note:
     If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

   - Control lever up against full-load stop
     At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

     Checking of starting:
     At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,5 d

En 1. Edition

Testoil-ISO 4113

PES 5 M 55 C 320 RS 153
RSF 340/2300 M 59-8
0 400 075 979
1- 2- 4 - 5 - 3
0-72-144-216-288

supersedes –
company: Daimler-Benz
engine: OM 602
66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Control rod travel 20-22

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,15-3,25	0,25 (0,3)			
315	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in ☐

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
13-17 (1)	min.8,0	220	50 (7)	11,3+0,1	1000	(12)	100	min. 20,1
(2)	5,4-5,6	315	(8)	7,8-8,2	2500	(13)	1800	10,9-11,1
(3)	4,2-4,4	380**	(9)	-		(14)	2200	10,6-10,8
(4)	-		(10)	0-1,0	2950			
(5)	1,5	630-730	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		Difference	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes	
1	2	3	4	5	6	7	8	
2200	33,5-35,5 (32,5-36,5)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55,0	6,0	(12a)
			1000	31,5-32,5 (30,5-33,5)	315	5,0-6,0 (4,5-9,0)	1,0 (1,5)	(15)
					2500	22,0-26,0 (21,0-27,0)	2,5 (3,0)	(16)

Checking values in brackets

*ca.2,8 less control rod travel than in Column 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

4.86

1. ** Checking of idle-auxiliary spring; setting at n = 380 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 315 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

   - Control lever up against idle stop
     At n = 340 1/min, I = 1.8 A, control-rod travel = (12,6-14,0) mm, fuel delivery (33,0-41,0) ccm/1000 strokes.

     Note:
     If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

   - Control lever up against full-load stop
     At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

     Checking of starting:
     At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 55 C 320 RS 154
RSF 375/2300 M 61
0 400 074 948
1- 3- 4 - 2
0-90-180-270

supersedes–
company Daimler-Benz
engine OM 601
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) 20-22 Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	11,1+0,1	3,1-3,2	0,25 (0,3)			
375	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in [ ]. Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
13-17 (1)	min.11,5	250	50 (7)	11,1+0,1	1000	(12)	100	min. 20,1
(2)	5,4-5,6	375	(8)	7,8-8,2	2500	(13)	1800	10,8-11,0
(3)	4,4-4,6	400**	(9)	-		(14)	2200	10,3-10,5
(4)	-		(10)	0-1,0	2950			
(5)	1,5	630-730	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55,0	6,0 (12a)
			1000	31,0-32,0 (30,0-33,0)	375	5,0-6,0 (4,5-9,0)	1,0 (1,5) (15)
					2500	22,0-26,0 (21,0-27,0)	2,5 (3,0) (16)

Checking values in brackets

*ca. 2,4 less control rod travel than in Column 2

1. ** Checking of idle-auxiliary spring; setting at n = 375 1/min control-rod travel (4.3-4.7 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 375 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 $\pm$ 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Setting the idle control-rod travel at PLA box

   Loosen correction nut when doing this.

9. Checking the pneumatic idle increase (PLA)

   At 0.4 bar vacuum n = 425 1/min, control-rod travel = (7.0-8.7 mm) delivery = (13.0-21.0 ccm/1000 strokes).

10. Leak test (vacuum test) on PLA box

    Apply 0.8 bar vacuum to PLA box. Permissible pressure drop 30 mbar in 15 sec.

11. Checking the intermediate control curve (control-lever position)

    Control lever 30°, n = 1000 1/min, control-rod travel = 6.3-7.0 mm

12. RWG testing and setting with evaluation circuit R2-1.3

    Receiving inspection

    Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Operate at speed of 1000 1/min; a voltage of 2.65-2.73 (2.61-2.77) V must be indicated on digital voltmeter.

    RWG setting

    At 1000 1/min set a delivery of 18.0-19.0 (17.0-20.0) ccm/1000 strokes with control lever. Move RWG until U = 2.095-2.105 is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 2.65-2.73 V must be obtained.

D22

D22

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 55 C 320 RS 154
RSF 360/2300 M 63
0 400 074 942
1- 3- 4 - 2
0-90-180-270

supersedes_

company Daimler-Benz
engine OM 601
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) 20-22 Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	11,1+0,1	3,1-3,2	0,25 (0,3)			
335	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in ☐. Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	7	Rotational speed rev/min 8	Control rod travel mm 9
13-17 (1)	min. 9,0	225	50 (7)	11,1+0,1	1000	(12)	100	min. 20,1
(2)	5,4-5,6	335	(8)	7,8-8,2	2500	(13)	1800	10,8-11,0
(3)	4,2-4,4	400**	(9)	-		(14)	2200	10,3-10,5
(4)	-		(10)	0-1,0	2950			
(5)	1,5	590-690	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		Difference	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	cm³/1000 strokes 8	
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55,0	6,0	(12a)
					335	5,0-6,0 (4,5-9,0)	1,0 (1,5)	(15)
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 (3,0)	(16)

Checking values in brackets

*ca. 2,4 less control rod travel than in Column 2

1. ** Checking of idle-auxiliary spring; setting at n = 400 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 335 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

   - Control lever up against idle stop
     At n = 360 1/min, I = 1.8 A, control-rod travel = (12.0-13.4) mm, fuel delivery (30.0-38.0) ccm/1000 strokes.

     Note:
     If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

   - Control lever up against full-load stop
     At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

     Checking of starting:
     At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

9. Checking the intermediate control curve (control-lever position)

   Control lever 30°, n = 1000 1/min, control-rod travel = 6.3-7.0 mm

12. RWG testing and setting with evaluation circuit R2-1.3
    Receiving inspection
    Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Operate at speed of 1000 1/min; a voltage of 2.65-2.73 (2.61-2.77) V must be indicated on digital voltmeter.

    RWG setting
    At 1000 1/min set a delivery of 18.0-19.0 (17.0-20.0) ccm/1000 strokes with control lever. Move RWG until U = 2.095-2.105 is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 2.65-2.73 V must be obtained.

D24

D24

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 w 5

1. Edition

En

Testoil-ISO 4113

PES 6 M 55 C 320 RS 156
RSF 315/2300 M 60-4
0 400 076 988
1- 5 - 3 - 6 - 2 - 4
0-60 -120-180-240-300

supersedes

company Daimler-Benz
engine: OM 603
80 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note: Before starting testing, observe the important instructions on the reverse.

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Control rod travel 20-22

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	11,3+0,1	3,15-3,25	0,25 (0,3)			
290	5,4-5,6	0,55-0,65	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in ☐.

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
13-17 (1)	min.7,0	220	50 (7)	11,3-11,4	1000	(12)	100	min. 20,1
(2)	5,4-5,6	290	(8)	7,8-8,2	2500	(13)	1800	10,9-11,1
(3)	4,2-4,4	360**	(9)	-		(14)	2200	10,6-10,8
(4)	-		(10)	0-1,0	2950			
(5)	1,5	620-720	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	33,5-35,5 (32,5-36,5)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55,0	6,0 (12a)
					290	5,5-6,5 (5,0-9,5)	1,0 (1,5) (15)
			1000	31,5-32,5 (30,5-33,5)	2500	22,0-26,0 (21,0-27,0)	2,5 (3,0) (16)

Checking values in brackets

*ca.2,8 mm less control rod travel than in Column 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

E1

1. ** Checking of idle-auxiliary spring; setting at n = 360 1/min control-rod travel (4,1-4,5 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 0,9-1,0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46,5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 290 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19,5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

   - Control lever up against idle stop
     At n = 315 1/min, I = 1.8 A, control-rod travel = (12,6-14,0) mm, fuel delivery (32,0-40,0) ccm/1000 strokes.

     Note:
     If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

   - Control lever up against full-load stop
     At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

     Checking of starting:
     At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

9. Checking the governor with ADA pressure unit

Speed in^{-1}	Pressure (absolute) mbar	Control-rod travel deduction from max. full-load control-rod travel (mm)
1000	930	0.1-0.5
1000	840	1.1-1.3
1000	700	2.3-2.7

10. Pin projection = 16.65 ± 0.05 mm

En

E2

E2

(5)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 3,0 w 2

1. Edition

En

Testoil-ISO 4113

PES 6 M 55 C 320 RS 157
RSF 315/2300 M 64
0 400 076 992
1- 5- 3 - 6 - 2 - 4
0-60-120-180-240-300

supersedes

company Daimler-Benz
engine OM 603
110 kW (USA)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC)

Control rod travel 20-22

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,9+0,1	5,1-5,2	0,25 (0,3)			
290	5,3-5,5	0,55-0,65	0,1 (0,15)			
1600			0,25 (0,3)			
2200			0,25 (0,3)			
1000			0,25 (0,3)			

Set uniform delivery according to the values in ☐

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	7	Rotational speed rev/min 8	Control rod travel mm 9
8-12 (1)	min.7,0	200	50 (7)	13,9+0,1	1000	(12)	100	min. 20,1
(2)	5,3-5,5	290	(8)	8,1-8,5	2500	(13)	1600	13,2-13,4
(3)	4,2-4,4	360**	(9)	-		(14)	2200	12,3-12,5
(4)	-		(10)	0-1,0	2950		Switching point	
(5)	2,5	510-610	(11)			(6)		

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		Difference	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	cm³/1000 strokes 8	
2200	48,5-50,5 (47,5-51,5)	2500*	1600	50,0-51,5 (49,0-52,5)	100	min. 55,0	6,0	(12a)
			1000	51,0-52,0 (50,0-53,0)	290	5,5-6,5 (5,0-9,5)	1,0 (1,5)	(15)
					2500	29,0-33,0 (28,0-34,0)	2,5 (3,0)	(16)

Checking values in brackets

*ca. 4,0 less control rod travel than in Column 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

1. Testing with ALDA

Point	min^{-1}	cm^3/1000 strokes	Control-rod travel	Pressure absolute
18	1000	51.0-52.0 (50.0-53.0)	13.9-14.0	1850 mbar
	***			
18a	1000	33.0-34.0 (32.0-35.0)	9.9-10.1	1050 mbar
19	2200	48.5-50.5 (47.5-51.5)	12.3-12.5	1850 mbar
12a	100	min. 52.0	min. 20.1	-
15	290	5.5-6.5 (5.0-9.5)	5.3-5.5	-

2. ** Checking of idle-auxiliary spring; setting at n = 360 l/min control-rod travel (4.1-4.5 mm).

3. Setting the idle control-lever position:

   At 1000 l/min, control-rod travel 1.7-1.8 mm.

4. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 l/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

5. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 290 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

6. Overflow valve 1 469 990 351.

7. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

8. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 $\pm$ 0.2 (0.3) degrees camshaft according to cyl. 1.

En

E4

E4

9. Checking the ELR servo magnet

- Control lever up against idle stop
  At n = 315 1/min, I = 1.8 A, control-rod travel = (12.8-14.2) mm, fuel delivery (42.0-49.0) ccm/1000 strokes.

  Note:
  If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop
  At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

  Checking of starting:
  At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

10. Checking the intermediate control curve (control-lever position)

Control lever 30°, n = 1000 1/min, control-rod travel = 9.5-10.2 mm

11. RWG testing and setting with evaluation circuit R2-1.3

Receiving inspection
Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Apply 1850 bar to ALDA. Operate at speed of 1000 1/min; a voltage of 3.23-3.31 (3.19-3.35) V must be indicated on digital voltmeter.

RWG setting
At 1000 1/min set a delivery of 23.0-24.0 (22.0-25.0) ccm/1000 strokes with control lever. Move RWG until U = 2.095-2.105 is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 3.23-3.31 V must be obtained.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 w 3
1. Edition En

Testoil-ISO 4113

PES 6 M 55 C 320 RS 157
RSF 315/2300 M 64-2
0 400 076 987

1- 5- 3- 6- 2- 4
0-60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -
company Daimler-Benz
engine OM 603
110 kW

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) 20-22 Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,9+0,1	5,1-5,2	0,25(0,3)			
290	5,3-5,5	0,55-0,65	0,1 (0,15)			
1600			0,25(0,3)			
2200			0,25(0,3)			
1000			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
8-12	①	min.7,0	200	50	⑦	13,9+0,1	1000	⑫	100	min. 20,1
	②	5,3-5,5	290		⑧	8,1-8,5	2500	⑬	1600	13,2-13,4
	③	4,2-4,4	360**		⑨	-		⑭	2200	12,3-12,5
	④	-			⑩	0-1,0	2950			
	⑤	2,5	510-610		⑪			⑥	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2200	48,5-50,5 (47,5-51,5)	2500*	1600	50,0-51,5 (49,0-52,5)	100	min.55,0	6,0	⑫a
			1000	51,0-52,0 (50,0-53,0)	290	5,5- 6,5 (5,0- 9,5)	1,0 (1,5)	⑮
					2500	29,0-33,0) (28,0-34,0)	2,5 (3,0)	⑯

Checking values in brackets

*ca. 4,0 less control rod travel than in Column 2

BOSCH

E6

1. Testing with ALDA

Point	min^{-1}	cm³/1000 strokes	Control-rod travel	Pressure absolute
18	1000	51.0-52.0 (50.0-53.0)	13.9-14.0	1850 mbar
	***			
18a	1000	33.0-34.0 (32.0-35.0)	9.9-10.1	1050 mbar
19	2200	48.5-50.5 (47.5-51.5)	12.3-12.5	1850 mbar
12a	100	min. 52.0	min. 20.1	-
15	290	5.5-6.5 (5.0-9.5)	5.3-5.5	-

2. ** Checking of idle-auxiliary spring; setting at n = 360 l/min control-rod travel (4.1-4.5 mm).

3. Setting the idle control-lever position:

   At 1000 l/min, control-rod travel 1.7-1.8 mm.

4. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 l/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

5. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 290 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

6. Overflow valve 1 469 990 351.

7. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

8. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

En

E7

E7

9. Checking the ELR servo magnet

- Control lever up against idle stop
  At n = 315 1/min, I = 1.8 A, control-rod travel = (12.8-14.2) mm, fuel delivery (42.0-49.0) ccm/1000 strokes.

  Note:
  If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop
  At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

  Checking of starting:
  At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

10. Checking the intermediate control curve (control-lever position)

Control lever 30°, n = 1000 1/min, control-rod travel = 9.5-10.2 mm

11. RWG testing and setting with evaluation circuit R2-1.3

Receiving inspection

Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Apply 1850 bar to ALDA. Operate at speed of 1000 1/min; a voltage of 3.23-3.31 (3.19-3.35) V must be indicated on digital voltmeter.

RWG setting

At 1000 1/min set a delivery of 23.0-24.0 (22.0-25.0) ccm/1000 strokes with control lever. Move RWG until U = 2.095-2.105 is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 3.23-3.31 V must be obtained.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 w 4
1. Edition En

Testoil-ISO 4113

PES 6 M 55 C 320 RS 157-1
RSF 315/2300 M 65
0 400 076 986

1- 5- 3- 6- 2- 4
0-60-120-180-240-300

supersedes -
company Daimler-Benz
engine OM 603
110 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) 20-22 Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,9+0,1	5,1 -5,2	0,25 (0,3)			
290	5,3-5,5	0,55-0,65	0,1 (0,15)			
1600			0,25 (0,3)			
2200			0,25 (0,3)			
1000			0,25 (0,3)			

Set uniform delivery according to the values in ☐. Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
8-12 (1)	min.7,0	200	50 (7)	13,9+0,1	1000	(12)	100	min.20,1
(2)	5,3-5,5	290	(8)	8,1-8,5	2500	(13)	1600	13,2-13,4
(3)	4,2-4,4	360**	(9)	-		(14)	2200	12,3-12,5
(4)	-		(10)	0-1,0	2950			
(5)	2,5	510-610	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		Difference	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes	
1	2	3	4	5	6	7	8	
2200	48,5-50,5 (47,5-51,5)	2500*	1600	50,0-51,5 (49,0-52,5)	100	min. 55,0	6,0	(12a)
			1000	51,0-52,0 (50,0-53,0)	290	5,5 - 6,5 (5,0 - 9,5)	1,0 (1,5)	(15)
					2500	29,0 -33,0 (28,0- 34,0)	2,5 (3,0)	(16)

Checking values in brackets

*ca. 4,0 less control rod travel than in Column 2

BOSCH

E9

1. Testing with ALDA

Point	min^{-1}	cm³/1000 strokes	Control-rod travel	Pressure absolute
18	1000	51.0-52.0 (50.0-53.0)	13.9-14.0	1850 mbar
	***			
18a	1000	33.0-34.0 (32.0-35.0)	9.9-10.1	1050 mbar
19	2200	48.5-50.5 (47.5-51.5)	12.3-12.5	1850 mbar
12a	100	min. 52.0	min. 20.1	-
15	290	5.5-6.5 (5.0-9.5)	5.3-5.5	-

2. ** Checking of idle-auxiliary spring; setting at n = 360 l/min control-rod travel (4.1-4.5 mm).

3. Setting the idle control-lever position:

   At 1000 l/min, control-rod travel 1.7-1.8 mm.

4. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 l/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

5. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 290 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

6. Overflow valve 1 469 990 351.

7. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

8. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

En

E10

E10

9. Checking the ELR servo magnet

- Control lever up against idle stop
  At n = 315 l/min, I = 1.8 A, control-rod travel = (12.8-14.2) mm, fuel delivery (42.0-49.0) ccm/1000 strokes.

  Note:
  If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop
  At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

  Checking of starting:
  At n = 100 l/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

10. Checking the intermediate control curve (control-lever position)

Control lever 30°, n = 1000 l/min, control-rod travel = 9.5-10.2 mm

Testoil-ISO 4113

PES 5 M/55 C 320 RS 159
RSF 340/2300 M 60-3
0 400 075 976

1- 2- 4- 5- 3
0-72-144-216-288
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes-
company Daimler-Benz
engine OM 602-LVP
66 kW

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC) 20-22 Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	11,3+0,1	3,1-3,2	0,25(0,3)			
315	5,0-5,2	0,5-0,6	0,1 (0,15)			
1800			0,25(0,3)			
2250			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
13-17 ①	min.7,5	220	50 ⑦	11,3+0,1	1000	⑫	100	min. 20,1
②	5,0-5,2	315	⑧	7,0-7,4	2500	⑬	1800	10.8-11,0
③	3,8-4,0	380**	⑨	-		⑭	2250	10,4-10,6
④	-		⑩	0-1,0	2950			
⑤	2,5	530-630	⑪			⑥	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (6a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2250	32,0-34,0 (31,0-35,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min.55,0	6,0 (12a)
			1000	31,0-32,0 (30,0-33,0)	315	5,0- 6,0 (4,5- 9,0)	1,0 (1,5) (15)
					2500	16,0-20,0 (15,0-21,0)	2,5 (3,0) (16)

Checking values in brackets

*ca.3,5 less control rod travel than in Column 2

E12

1. ** Checking of idle-auxiliary spring; setting at n = 380 1/min control-rod travel (3.7-4.1 mm).

2. Setting the idle control-lever position:

   At 1000 1/min, control-rod travel 1.9-2.0 mm.

3. Checking the idle-auxiliary spring cutoff

   Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 48.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

   Control lever up against idle stop.
   At n = 335 min^{-1} and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

   FBG setting and locking according to start of delivery average of all cylinders, 18.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

   - Control lever up against idle stop
     At n = 340 1/min, I = 1.8 A, control-rod travel = (12.5-13.9) mm, fuel delivery (33.0-41.0) ccm/1000 strokes.

     Note:
     If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

   - Control lever up against full-load stop
     At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

     Checking of starting:
     At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

9. Checking the intermediate control curve (control-lever position)

   Control lever 30°, n = 1000 1/min, control-rod travel 7.1-7.8mm

10. Checking the governor with ADA pressure unit

Speed in^{-1}	Pressure (absolute) mbar	Control-rod travel deduction from max. full-load control-rod travel (mm)
1000	930	0.1-0.5
1000	840	1.1-1.3
1000	700	2.3-2.7

11. Pin projection = 16.65 ± 0.05 mm

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0x
En 1. Edition

Testoil-ISO 4113

PES 5 MW 55/320 RS 15
RW 375/1450 MW 19-1

0 403 245 024
1-2 - 4 - 5 - 3
0-72-144-216-288 ± 0,50 (0,75)

supersedes–
company Daimler-Benz
engine: W 123/OMG 17
51,5 kW

¹ All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke °1,70-1,80 (1,65-1,85) mm (from BDC)

Control rod travel 19,5-22,5 mm

without ADA

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,1+0,1	3,8-3,9	0,25(0,3)			
350	6,3-6,5	0,65-0,75	0,1 (0,15)			
1430			0,25(0,3)			
2080			0,25(0,3)			

Set uniform delivery according to the values in [ ].

Checking values in brackets

B. Governor Settings

without ADA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
27-31 ①	min.11	100	69 ⑦	12,1	1570-1590	⑫	20,5-21,5	100
②	max.11	250	⑧			⑬	13,0-13,2	1430
③	6,3-6,5	350	⑨			⑭	13,1-13,2	1000
④	**	360	⑩	0,0-1,0	2400			
⑤	2,0	600-650	⑪			⑥	Switching point 270-320 (250-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ADA

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery idle		
							Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
1430	39,5-42,5 (38,5-43,5)	1570-1590 * (1560-1600)	1000	38,0-39,0 (37,0-40,0)	100	min. 57	6,0 (12a)
					350	6,5-7,5 (6,0-10,0)	1,0 (1,5) (15)
					2080	9,0-15,0 (8,0-16,0)	2,5 (3,0) (16)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

8.84

1. Test sequence - Change in VDT-W-420/300
   Suppl. 2, Ed. 2

   Section 4.1 - Adjust the spring retainer (compensation capsule)

   New text:

   Run the injection pump at n = 1,000 min^{-1}.
   Fix the control lever at 69°.
   Using a pin wrench, turn in the spring retainer so far that the control-rod travel is reached at n = 1,000 min^{-1}. Pin wrench = KDEP 1064/1.
   Measure the full-load delivery.

   Section 4.3 changes as follows:

   Drive the injection pump at n = 800 min^{-1}.
   Set the control lever so that the control-rod travel reaches 1,0 - 1,3 mm.
   The control lever must lie within the permissible tolerance.
   Move the idle stop up against the control lever and lock it there.
   Reduce the pump speed to n = 350 min^{-1} and release the leaf spring (32) with the lower adjusting screw (28) until the control-rod travel specified in the Test-Specifications Sheet is reached.
   Carry on according to the Testing Instructions, taking into account that Section 4.8 no longer applies.

2. Testing of Sections A, B and C is carried out without altitude pressure compensator (ADA) aneroid box.
   After this test has been completed, the aneroid box is refitted.

   Testing the governor with the ADA aneroid box.

Pump speed	Pressure (abs. in mbar)	Reduction from the maximum full-load control-rod travel (mm)
1,000	840	0,9 - 1,1 (0,85 - 1,15)
1,000	913	0,1 - 0,5 (0,05 - 0,55)
1,000	666	2,2 - 3,0 (2,15 - 3,05)

3. Pin projection dimension = 16.65 ± 0.05 mm
4. ** At this pump speed, apply pressure to the control lever and increase the control-rod travel by 0.4 $^{+0.1}$ mm.
   The idle delivery may not change.

5. Setting angle - Idle/full-load 38 - 42°

6. Sensing-lever setting: Bring sensing lever into contact at $n = 375\ min^{-1}$ (control lever in full-load position). Control-rod travel must be 0.1 (0.1 - 0.2) mm more than the full-load control-rod travel at $n = 1{,}000\ min^{-1}$.

7. Pneumatic shut-off check:

   Move the control lever to the idle position.
   Drive the injection pump at $n = 350\ min^{-1}$.
   At $P\mu = 450$ mbar (338 mm Hg) (vacuum), the control rod must move rapidly to control-rod travel = 0 mm position.

E16

E16

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 g
8. Edition
En

Testoil-ISO 4113

PES 5 MW 55/320 RS 16
RW 375/2200 MW 22
0 403 245 008

supersedes 1.85
company Daimler-Benz
engine OM 617A - USA
84,6 kW

(Set idle stage) before starting test. Please note instructions on reverse side.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) 21 mm Control rod travel

without ALDA

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,6+0,1	5,35-5,45	0,25(0,3)			
365	5,3-5,4	0,9-1,0	0,05 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in [ ]. Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
30	(1)	min.11	100	67 ± 2	(7)	11,2	2300-2320	(12)	100	20,5-21,5
	(2)	max.11	320		(8)			(13)	1600	12,7-12,9
	(3)	5,3-5,4	365		(9)	4,0	2620-2720	(14)	1000	13,6-13,7
	(4)	**			(10)	0-1,0	2950		2180	11,7-11,9
	(5)	-			(11)	-	-	(6)	Switching point	
		-							260-310 (240-390)	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17)(18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2295-2325)	1600	52,0-53,5 (51,0-54,5)	100	min.55,0	6,0	(12a)
			1000	53,5-54,5 (52,5-55,5)	365	9,0-10,0 (7,5-11,5)	1,0 (1,5)	
					375	(5,5-7,5)**	(1,5)	(15)
					2550	24,5-27,5 (23,5-28,5)	2,5 (3,0)	(16)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

E17

Test with ALDA

Point	min^{-1}	cm^3/1000 lifts	Control-rod travel	Pressure (absolute)
18	1000	53.5 - 54.5 (52.5 - 55.5)	13.6 - 13.7	1733 mbar (1300 mmHg)
18a	1000***	43.0 - 45.0 (42.0 - 46.0)	-	1067 mbar (800 mmHg)
19	2180	50.0 - 52.0 (49.0 - 53.0)	11.7 - 11.9	1733 mbar (1300 mmHG)
12a	100	min. 55.0	20.5 - 21.5	1733 mbar (1300 mmHG)
15	365	9.0 - 10.0 (7.5 - 11.5)	5.3 - 5.4	987 mbar (740 mmHG)

1. Setting the idle stage: without ALDA

   Text replaces Section 4.1 of test instructions
   Set control-lever position 30°.
   Drive injection pump at n = 800 min^{-1}.
   Screw in spring retainer (torque-control retainer) so that control-rod travel of 1,0 - 1,3 mm is obtained.
   Further test steps as per test instructions VDT-W-420/300.

2. ** Engagement of idle-speed aux. spring at shallowing-out of characteristic; no change allowable in idle delivery.

3. Setting the sensing finger:

   Bring sensing finger into engagement at n = 350 min^{-1} with control lever in full-load position. Control-rod travel must be 0.2 - 0.5 mm (0.1-0.6) mm above full-load control-rod travel at n = 1000 min^{-1} and 1733 mbar (1300 mmHG)/setting without ALDA.

4. *** Correction of injection quantity at correction screw on ALDA aneroid box. Max. correction $\pm$ 0.75 mm control-rod travel.

5. Shutoff check: Spring idle stop compressed.
   at n = 200 min^{-1} max. control-rod travel = 5 mm.

6. Pin projection dimension = 16.65 $\pm$ 0.1 mm

7. Checking the pneumatic shutoff:
   Control lever in idle position. Drive injection pump at n = 375 min^{-1}.
   At p_u = 450 mbar (338 mmHG) (vacuum) control rod must move briskly to control-rod travel 0 mm.

8. Adjustment range between idle and full load = 35 - 39°

9. ** Idle checking point.

Test Specifications Fuel Injection Pumps and Governors

WPP 00 1/4 MB 3,0 m

4. Edition En

PES 5 MW 55/320 RS 16
RW 375/2200 MW 28-1
0 403 245 013
0 403 245 014 - Sales model
Use overflow valve 1 417 413 012

supersedes 8.84
company Daimler Benz
engine OM 617 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note: Before starting testing, observe the important instructions on the reverse.

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC) Control rod travel 19,5-22,5

without ALDA (2,05-2,25)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,5+0,1	5,15 - 5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,05 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

without ALDA

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
27-31 ①	min.11	100	69 ⑦	12,1-12,3	2180	⑫	100	20,5-21,5
②	max.11	320	⑧	11,2	2300-2320	⑬	1600	13,1-13,3
③	5,7-5,8	365	⑨	4,0	2620-2720	⑭	1000	13,5-13,6
④	**	-	⑩	0,0-1,0	2950	⑥	Switching point	
⑤	-	-	⑪	-	-		260-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load delivery ⑲ Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,6)	100	min. 55,0 (52,0)	6,0	⑫a
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0 (1,5)	⑮
					375	(5,5-9,5)++	(1,5)	
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0)	⑯

Checking values in brackets

* 1 mm less control rod travel than in Column 2

2.86

E19

Testing with ALDA

Point	min^{-1}	cm^3/1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0 - 11,0 (8,5 - 12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300 Suppl. 2, Ed. 2.

Set the control lever to an angle of 69^0. Operate the fuel-injection pump at 1000 min^{-1}.
Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49^0. Operate the fuel-injection pump at 1000 min^{-1}. Control-rod travel 8,8 - 9,5 must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300 Suppl. 2, Ed. 2.

Operate the fuel-injection pump at n = 800 min^{-1}. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at n=520-550 min^{-1}.

4. Adjusting the sensing lever

Place the control lever against the full-load stop.
Operate the fuel-injection pump at n = 375 min^{-1}. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at n = 1000 $^{-1}$.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm$ 0.75 mm control-rod travel.

6. Pin projection = 16.65 $\pm$ 0.1 mm

7. Shutoff check: Operate the fuel-injection pump at n = 200 min^{-1}. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at n = 375 min^{-1}. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = 38 - 42°.

10. ** Idle checking point

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,o t
3. Edition
En

PES 5 MW 55/320 RS 16 RW 375/2200 MW 28-3
0 403 245 020
0 403 245 021 - Sales model

supersedes 6.84
company Daimler-Benz
engine OM 617 A-USA
92 kW (125 PS)

Testoil-ISO 4113

Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) Control rod travel 19,5-22,5

without ALDA

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,5+0,1	5,15-5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,05(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in [ ]. Checking values in brackets

B. Governor Settings

without ALDA

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
27-31 (1)	min.11	100	69 (7)	12,1-12,3	2180	(12)	100	20,5-21,5
(2)	max.11	320	(8)	11,2	2300-2320	(13)	1600	13,1-13,3
(3)	5,7-5,8	365	(9)	4,0	2620-2720	(14)	1000	13,5-13,6
(4)	**		(10)	0,0-1,0	2950			
(5)	-	-	(11)	-	-	(6)	Switching point 260-310(240-330)	
	-	-						

C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load delivery (19) Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17)(18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0 (12a)
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	0,5 (1,5)
					375	(5,5-9,5) **	(1,5) (15)
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0) (16)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

12.85

E22

MB 3,0 t

Testing with ALDA

Point	min^{-1}	cm^3/1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5 (50,5-53,5)	13,5 - 13,6	1733 mbar (1300 mmHg)
18a	*** 1000	41,0-43,0 (40,0-44,0	-	1067 mbar (800 mmHg)
19	2180	50,0-52,0 (49,0-53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle 69°. Drive injection pump at 1000 min^{-1}. Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min^{-1}. Control-rod travel 8.8 - 9,5 mm must be reached.

2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at n = 800 min^{-1}. Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

3. Setting the idle auxiliary spring (70)

** Set the idle auxiliary spring so that it just touches at n = 520 - 550 min^{-1} at the end of the characteristic curve.

4. Setting the sensing lever

Move the control lever to the full-load stop.
Drive the injection pump at n = 375 min^{-1}. Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at n = 1000 min^{-1}.

5. *** Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction ± 0.75 mm control-rod travel.

6. Pin projection = 16.65 ± 0.1 mm.

7. Stop - check: Drive the injection pump at n = 200 min^{-1}. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.

8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at n = 375 min^{-1}. At Pu = 450 bar (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.

9. Range of adjustment idle - full load = 38 - 42°.

10. ** Idle checking point.

11. Use overflow valve 1 417 413 012

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 t 1
3. Edition
En

PES 5 MW 55/320 RS 16 RW 375/2200 MW 29-1

0 403 245 022
0 403 245 023 - Sales model

supersedes 6.84
company Daimler-Benz
engine OM 617A-USA
92 kW (125 PS)

Tesch ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Note: Before starting testing, observe the important instructions on the reverse.

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) Control rod travel 19,5-22,5

without ALDA

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,5+0,1	5,15-5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,05(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1.

Set uniform delivery according to the values in [ ]. Checking values in brackets

B. Governor Settings

without ALDA

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
27-31 (1)	min.11	100	69 (7)	12,1-12,3	2180	(12)	100	min. 55
(2)	max.11	320	(8)	11,2	2300-2320	(13)	1600	13,1-13,3
(3)	5,7-5,8	365	(9)	4,0	2620-2720	(14)	1000	13,5-13,6
(4)	**		(10)	0,0-1,0	2950			
(5)	-	-	(11)	-	-	(6)	Switching point 280-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load delivery (19) Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0	6,0	(12a)
					365	10,0-11,0 (8,5-12,5)	0,5 (1,5)	(15)
			1000	51,5-52,5 (50,5-53,5)	375	(5,5-9,5) **	(1,5)	
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0)	(16)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

12.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Testing with ALDA

Point	min^{-1}	cm^3/1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5 (50,5-53,5)	13,5 - 13,6	1733 mbar (1300 mmHg)
18a	*** 1000	41,0-43,0 (40,0-44,0	-	1067 mbar (800 mmHg)
19	2180	50,0-52,0 (49,0-53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle 69°. Drive injection pump at 1000 min^{-1}. Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min^{-1}. Control-rod travel 8.8 - 9.5 mm must be reached.

2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at n = 800 min^{-1}. Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

3. Setting the idle auxiliary spring (70)

** Set the idle auxiliary spring so that it just touches at n = 520 - 550 min^{-1} at the end of the characteristic curve.

4. Setting the sensing lever

Move the control lever to the full-load stop. Drive the injection pump at n = 375 min^{-1}. Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at n = 1000 min^{-1}.

5. *** Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction ± 0.75 mm control-rod travel.

6. Pin projection = 16.65 ± 0.1 mm.

7. Stop - check: Drive the injection pump at n = 200 min^{-1}. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.

8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at n = 375 min^{-1}. At Pu = 450 bar (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.

9. Range of adjustment idle - full load = 38 - 42°.

10. ** Idle checking point.

Test Specifications Fuel Injection Pumps and Governors

WFP 001/4 MB 3,0 t 2
3. Edition
En

Testoil-ISO 4113

PES 5 MW 55/320 RS 16-1 RW 375/2200 MW 28-3
0 403 245 025
0 403 245 026-Sales model

supersedes 6.84
company Daimler-Benz
engine OM 617 A-USA
92 kW (125 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) 19,5-22,5 Control rod travel

without ALDA

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15-5,25	0,25 (0,3)			
365	5,7-5,8	1,0-1,1	0,05 (0,15)			
1600			0,25 (0,3)			
2180			0,25 (0,3)			
Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1.						

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

without ALDA

Lower rated speed				Upper rated speed				Variations in control rod travel		
	Degree of deflection of control lever	Control rod travel	Rotational speed		Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	1	mm 2	rev/min 3		4	mm 5	rev/min 6	7	rev/min 8	mm 9
①	27-31	min. 11	100	⑦	69	12,1-12,3	2180	⑫	100	20,5-21,5
②		max. 11	320	⑧				⑬		
③		5,7-5,8	365	⑨		11,2	2300-2320	⑭	1600	13,1-13,3
④		**		⑩		4,0	2620-2720		1000	13,5-13,6
⑤		-	-	⑪		0,0-1,0	2950		Switching point	
		-	-			-	-	⑥	260-310 (240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load delivery ⑲ Test oil temp. 40°C (104°F)		Full-load speed regulation ⑧a	Variations in fuel delivery ⑰ ⑱		Starting fuel delivery idle		
							Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0 ⑫a
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	0,5 (1,5) ⑮
					375	5,5-9,5)**	(1,5)
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0) ⑯

Checking values in brackets

* 1 mm less control rod travel than in Column 2

12.85

F4

Testing with ALDA

Point	min^{-1}	cm^3/1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0 - 11,0 (8,5 - 12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300 Suppl. 2, Ed. 2.

Set the control lever to an angle of 69^o. Operate the fuel-injection pump at 1000 min^{-1}.
Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49^o. Operate the fuel-injection pump at 1000 min^{-1}. Control-rod travel 8,8-9,5 mm must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300 Suppl. 2, Ed. 2.

Operate the fuel-injection pump at n = 800 min^{-1}. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at n=520-550 min^{-1}.

4. Adjusting the sensing lever

Place the control lever against the full-load stop.
Operate the fuel-injection pump at n = 375 min^{-1}. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at n = 1000 $^{-1}$.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm$ 0.75 mm control-rod travel.

6. Pin projection = 16.65 $\pm$ 0.1 mm

7. Shutoff check: Operate the fuel-injection pump at n = 200 min^{-1}. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at n = 375 min^{-1}. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = 38 - 42^{0}.

10. Testing and setting of control-rod travel sensor with evaluation circuit
K5/EES - RWG.00 RBN - 40

Receiving inspection:

Set control lever so that a voltage of 2.1 ± 0.005 V is indicated on the digital voltmeter.

Set engine speed of 1000 1/min; fuel delivery of 27.5 - 28.5 ccm/1000 lifts must be reached. Control lever at full-load stop (control-rod travel 13.5 - 13.6), voltage value 3.2 ± 0.08 V.

Setting the control-rod travel sensor:

At 1000 1/min set a fuel delivery of 27.5 - 28.5 ccm/1000 lifts with control lever. Move control-rod travel sensor until U = 2.1 ± 0.005 V is indicated (tighten fastening screws to 3 Nm). Control lever at full-load stop (control-rod travel = 13.5 - 13.6); voltage of 3.2 ± 0.04 V must be reached.

11. ** Idle checking point

Test Specifications Fuel Injection Pumps ① and Governors

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119
RQV 300-1400 MW 58
0 403 446 151

supersedes 10.85
company: Volvo
engine: TD 61.3012
113 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,1+0,1	7,5-7,7	0,35(0,6)			
300	6,5-6,6	1,6-2,0	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1480 1680	15,2-17,8 0-1,0				ca. 13 (3a)	300 100	6,5-6,6 min.8,1		
ca. 60	9,0 4,0	1440-1450 1565-1595								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	75,0-77,0 (73,0-79,0)	1440-1450*			100 300	19-21 mm RW 140,0-160,0 (137,0-163,0) 16,0-20,0 (13,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 9,4a

2. Edition En

PES 8 P 100 A 921/5 RS 286 RQV 325-1250 PA 445 KR
1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 017 and fuel-injection test tubing 9 681 271 023
Suction-gallery pressure 2,8 bar

supersedes 5.83
company: IHC
engine: DVT 573 B
Komb.-Nr.0 402 058 04

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test nISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,6-9,7	10,9-11,1	0,4			
325	5,0-5,1	1,7-2,3				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 63	8,6 4,0 1640	1290-1300 1505-1535 0-1,0	-	-	-	ca.10	100 325 350-410	7,1-8,0 4,9-5,1 =2,0	-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1250	0,8 bar 109,0-111,0 (107,0-113,0)	1290-1300*	LDA 900	0,8 bar 115,0-121,0 (113,0-123,0)	100	min. 170,0	1250 900	9,6+0,1 10,1+0,1
					325	17,0-23,0	700	9,8+0,1
			LDA 800	0 bar 73,0-81,0 (71,0-83,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

F9

D. Adjustment Test for Manifold Pressure Compensator

IHC 9,4a

Test at n = 800 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 8 P..RS 286 +RQV..PA 445 KR	0,11-0,16	0,82-0,87	Start end

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 30,4 k 1

1. Edition

En

PE 12 P 130 A 920 RS 294-1 RSUV 300-750 P9A 322 R
Komb.-Nr. 0 401 870 077
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company KHD
engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	300	6,2	750	13,5-13,6
	x = 4,0								280	14,7-15,3
							300	6,1-6,3	450	13,5-13,6
							300-360	= 2,0		
ca. 62 (2a)	12,5	790-800								
	4,0	810-840								
	970	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 15,2 a
2. Edition
En

PE 6 P 120 A 420 LS 324 RSUV 250-600 P8A 321 R

supersedes 6.83
company KHD
engine BA 6 M 816

Komb.-Nr. 0 401 876 228

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	14,9+0,1	29,5-29,9	0,5 (0,9)			
250	6,0-6,2	2,0-2,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	775	0,3-1,0	-	-	-	ca.26	250	5,6	600	14,9-15,0
	x = 4,0								270	16,2-16,8
							250	6,0-6,2	350	14,9-15,0
ca.65	13,9	640-650					250-310	= 2,0		
(2a)	4,0	660-690								
	800	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Adjust according to the engine records.		640-650*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 15,2 a 1

1. Edition

En

PE 6 P 130 A 420 LS 324-1 RSUV 250-600 P8A 321 R

supersedes -

company KHD

engine BA 6 M 816

Komb.-Nr. 0 401 876 282
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	13,5+0,1	35,8-36,1	0,6(1,0)			
250	6,1-6,3	2,0- 2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	250	5,7	600	13,5-13,6
	X = 4,0						250	6,1-6,3	230	14,7-15,3
ca.64 (2a)	13,9	640-650					260-320	2,0	330	13,5-13,6
	4,0	655-685								
	820	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Adjust according to the engine records.		640-650*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 20,2 d
2. Edition

PE 8 P 120 A 620/4 LS 325 RSV 250-1000 P 7 A 304 En
Komb.-Nr. 0 401 878 089
1-4-7-6-8-5-2-3 je 45° ± 0,5 (± 0,75°)

supersedes 6.83
company KHD
engine BA 8 M 816

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9 (29,3-30,1)	0,5(0,9)			
250	6,0-6,2	2,0-2,6 (1,7-2,9)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 18	250	5,6	1000	14,9-15,0
	x = 4,25						250	6,0-6,2	300	16,2-16,8
ca.60 (2a)	13,9	1040-1050					340-400	= 2,0	450	14,9-15,0
	4,0	1060-1090								
	1220	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known.		1040-1050*	-	-	100	19,5-21,0 mm RW	-	-
Adjust according to the engine records.								

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

F14

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 20,2 d 1

1. Edition

En

PE 8 P 130 A 620/4 LS 325-1 RSV 250-1000 P 7 A 304
Komb.-Nr. 0 401 878 110
1-4-7-6-8-5-2-3 je 45 ° ± 45 ° (± 0,75 °)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company KHD
engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,10 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,4-36,5)	0,6 (1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	250	5,7	1000	13,5-13,6
	X = 5,0						250	6,1-6,3	300	14,7-15,3
ca. 64 (2a)	12,5	1040-1050					335-395	= 2,0	500	13,5-13,6
	4,0	1065-1095								
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 20,2 c 2

1. Edition

En

PE 8 P 130 A 620/4 LS 325-1 RSUV 250-800 P 10 A 318 R
Komb.-Nr. 0 401 878 111
1-4-7-6-8-5-2-3 je 45 ° ± 0,5 ° (±0,75 °)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes—
company KHD
engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,4-36,5)	0,6 (1,0)			
250	6,2-6,4	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	250	5,8	800	13,5-13,6
	X = 4,0						250	6,2-6,4	300	14,7-15,3
ca. 50 (2a)	12,5	840-850					280-340	= 2,0	450	13,5-13,6
	4,0	865-895								
	1025	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		840-850 *	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

F16

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 20,2 g
1. Edition

PE 8 P 130 A 620/4 LS 325-1 RSUV 250-600 P 8 A 321 R En

Komb.-Nr. 0 401 878 114

1-4-7-6-8-5-2-3 je 45 ° ± 0,5 ° (± 0,75 °)

supersedes -
company KHD
engine BA 8 M 816

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	13,5+0,1	35,8-36,1 (34,5-36,5)	0,6 (1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	775	0,3-1,0	-	-	-	ca. 25	250	5,7	600	13,5-13,6
	X = 4,0						250	6,1-6,3	230	14,7-15,3
							260-320	= 2,0	350	13,5-13,6
ca. 64 (2a)	12,5	640-650								
	4,0	655-685								
	820	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		640-650 *	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

F17

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 20,2 c 3

1. Edition

En

PE 8 P 130 A 620/4 LS 325-1 RSUV 250-800 P 10 A 347 R
Komb.-Nr. 0 401 878 113
1-4-7-6-8-5-2-3 je 45° ± 0,5 ° (± 0,75 °)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes: –
company: KHD
engine: BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	250	5,7	800	13,5-13,6
	X =	4,0					250	6,1-6,3	300	14,7-15,3
							280-340	= 2,0	450	13,5-13,6
ca.56 (2a)	12,5	840-850								
	4,0	865-895								
	1025	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		840-850 *	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

F18

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 20.2 b 1

1. Edition

En

PE 8 P 130 A 420 LS 325-1 RS 250/1000 P 1 A 422 R

Komb.-Nr. 0 401 878 112

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -

company KHD

engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,6 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	FH ca.23	250	6,2	1000	13,5-13,6
	x = 5,0						400-460	= 2,0	420	14,7-15,3
VHca.57 FH full	12,5	1040-1050							550	13,5-13,6
(2a)	4,0	1095-1125								
	1260	0,3-1,4				150-200				

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

F19

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 15,2 e1
1. Edition

En

PE 6 P 130 A 420 LS 399-1 RSV 250-1000 P 7 A 460
Komb.-Nr. 0 401 876 279
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company KHD
engine BA6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	250	5,7	1000	13,5-13,6
	x = 5,0						250	6,1-6,3	300	14,7-15,3
ca.64	12,5	1040-1050					355-415	=2,0	500	13,5-13,6
(2a)	4,0	1065-1095								
	1230	0,3- 1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1040-1050*	-	-	-	-	-	-
Test specifications on request.								

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

F20

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 KHD 20,2 f
2. Edition
En

PE 8 P 120 A 620/4 LS 400 RSV 250-1000 P7A 460
Komb.-Nr. 0 401 878 100
1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je 45°±0,5°(±0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 6.83
company KHD
engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9 (29,3-30,1)	0,5 (0,9)			
250	6,0-6,2	2,0-2,6 (1,7-2,9)	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	5,6	1000	14,9-15,0
	x = 5,75						250	6,0-6,2	300	16,2-16,8
ca. 67	13,9	1040-1050					345-405	= 2,0	450	14,9-15,0
(2a)	4,0	1080-1110								
	1250	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Adjust according to the engine records.		1040-1050*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

F2.1

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 20,2 f1
1. Edition

PE 8 P 130 A 620/4 LS 400-1 RSV 250-1000 P 7 A 460 En
Komb.-Nr. 0 401 878 109
1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je 45° + 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company KHD
engine BA8M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5±0,1	35,8-36,1 (35,4-36,5)	0,6(1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	250	5,7	1000	13,5-13,6
	x = 5,0						250	6,1-6,3	300	14,7-15,3
ca. 64 (2a)	12,5	1040-1050					335-395	2,0	500	13,5-13,6
	4,0	1065-1095								
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1040-1050*	-	-	-	-	-	-
Test specifications on request.								

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

F22

F22

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 15,2 g
1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-1000 P 4 A 304-1
Komb.-Nr. 0 401 876 289
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,10 (1,95-2,15) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,2	1000	15,0-15,1
	X = 5,0						300	5,6-5,8	350	16,2-16,8
							365-425	=2,0	500	15,0-15,1
ca.64	14,0	1040-1050								
(2a)	4,0	1095-1125								
	1260	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

f23

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 15,2 g 1

1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 250-600 P 8 A 321 R

Komb.-Nr. 0 401 876 286

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -

company KHD

engine BA6M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	15,0-15,1	35,8-31,6 (35,5-36,4)	0,6(1,0)			
250	5,7-5,9	2,0- 2,6 (1,7- 2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	775	0,3-1,0	-	-	-	ca. 25	250	5,3	600	15,0-15,1
	x = 4,0						250	5,7-5,9	230	16,2-16,8
							260-320	=2,0	330	15,0-15,1
ca. 65 (2a)	14,0	540-650								
	4,0	660-690								
	825	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		640-650*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

F24

F24

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 15,2 g 2
1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-750 P 9 A 322-1
Komb.-Nr. 0 401 876 285
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company KHD
engine BA6M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.25	300	5,2	750	15,0-15,1
		x = 4,0					300	5,6-5,8	280	16,2-16,8
ca.62 (2a)	14,0	790-800					325-385	= 2,0	450	15,0-15,1
	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

G1

61

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 15,2g3
1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-750 POA 322-2
Komb.-Nr. 0 401 876 326
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,2	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,2-16,8
							320-380	=2,0	450	15,0-15,1
ca. 53 (2a)	14,0	790-800								
	4,0	830-860								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

G2

62

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 15,2g4
1. Edition
En

PE 6 P 130 A 420 LS 484 RSUV 300-1000 POA 347-1
Komb.-Nr. 0 401 876 290
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company KHD
engine BA6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	x = 2,0						300	5,6-5,8	280	16,2-16,8
							320-380	= 2,0	450	15,0-15,1
ca.66	14,0	1040-1050								
(2a)	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat (Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

G3

G3

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD15,2g6
1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-750 POA 353
Komb.-Nr. 0 401 876 292
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company KHD
engine B A6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 25	300	5,7	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,3-16,9
							300-350	=2,0	450	15,0-15,1
ca. 62 (2a)	14,0	790-800								
	4,0	815-845								
	980	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

G4

64

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2g7

1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-1000 POA 354
Komb.-Nr. 0 401 876 288
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA 6 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.22	300	5,2	1000	15,0-15,1
	x = 2,0						300	5,6-5,8	280	16,2-16,8
ca. 66	14,0	1040-1050					320-380 = 2,0		450	15,0-15,1
(2a)	4,0	1070-1100								
	1230	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat (Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

G5

G5

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 15,2 h

1. Edition En

PE 6 P 130 A 420 LS 484-1 RSV 300-1000 P4A 460-1
Komb.-Nr. 0 401 876 291
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 5
company KHD
engine BA 6 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 26	300	5,2	1000	15,0-15,1
	x = 5,0								350	16,2-16,8
							300	5,6-5,8	500	15,0-15,1
ca. 64	14,0	1040-1050					365-425 = 2,0			
(2a)	4,0	1095-1125								
	1260	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

G6

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 h

1. Edition

En

PE 8 P 130 A 620/4 LS 485 RSV 300-1000 P4A 304-1
Komb.-Nr. 0 401 878 128
1-4-7-6-8-5-2-3 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company KHD
engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x = 5,0	0,3-1,0	-	-	-	ca. 26	300	5,2	1000	15,0-15,1
									350	16,2-16,8
							300	5,6-5,8	500	15,0-15,1
ca. 64	14,0	1040-1050					365-425	= 2,0		
(2a)	4,0	1095-1125								
	1260	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

G7

G7

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 20,2 i 1

1. Edition

En

PE 8 P 130 A 620/4 LS 485 RSUV 250-600 P8A 321 R

Komb.-Nr. 0 401 878 121

1-4-7-6-8-5-2-3 je 45° ± 0,5° (± 0,75°)

supersedes

company KHD

engine BA 8 M 816

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	5,7-5,9	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	775	0,3-1,0	-	-	-	ca. 25	250	5,3	600	15,0-15,1
	x = 4,0								230	16,2-16,8
							250	5,7-5,9	350	15,0-15,1
ca. 65	14,0	640-650					260-320 = 2,0			
(2a)	4,0	660-690								
	825	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
Test specifications on request.		640-650*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

G8

G8

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 i 2

1. Edition

En

PE 8 P 130 A 620/4 LS 485 RSUV 300-750 POA 322-1
Komb.-Nr. 0 401 878 122
1-4-7-6-8-5-2-3 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	300	5,2	750	15,0-15,1
	x = 4,0								280	16,2-16,8
							300	5,6-5,8	450	15,0-15,1
ca. 61	14,0	790-800					315-375	= 2,0		
(2a)	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

G9

G9

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 20,2 i

1. Edition

En

PE 8 P 130 A 620/4 LS 485 RSUV 300-750 POA 322-2
Komb.-Nr. 0 401 878 137
1-4-7-6-8-5-2-3 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company KHD
engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,2	750	15,0-15,1
	x = 4,0								280	16,2-16,8
ca. 53 (2a)	14,0	790-800					300	5,6-5,8	450	15,0-15,1
	4,0	830-860					320-380	= 2,0		
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

G10

G10

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 20,2i3
1. Edition
En

PE 8 P 130 A 620/4 LS 485 RSUV 300-1000 POA 347-1
Komb.-Nr. 0 401 878 127
1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company KHD
engine BA8M816
-

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	x = 2,0						300	5,6-5,8	280	16,2-16,8
ca. 66 (2a)	14,0	1040-1050					320-380	=2,0	450	15,0-15,1
	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

G11

G11

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 20,2i4
1. Edition
En

PE8P 130 A 620/4 LS 485 RSUV 300-750 POA 347-3
Komb.-Nr. 0 401 878 135
1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,7	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,2-16,8
ca.53 (2a)	14,0	790-800					300-350	=2,0	450	15,0-15,1
	4,0	820-850								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

G 12

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 20,2i5
1. Edition
En

PE 8 P 130 A 620/4 LS 485 RSUV 300-750 P9A 353
Komb.-Nr. 0 401 878 124
1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes --
company KHD
engine BA8M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.25	300	5,7	750	15,0-15,1
	x=4,0						300	5,6-5,8	280	16,2-16,8
							300-350	=2,0	450	15,0-15,1
ca.62 (2a)	14,0	790-800								
	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

G13

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 20,2i6
1. Edition
En

PE8P130A 620/4 LS 485 RSUV 300-1000 POA 354
Komb.-Nr. 0 401 878 123
1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA8M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.22	300	5,2	1000	15,0-15,1
	x=2,0						300	5,6-5,8	280	16,2-16,8
							320-380	x=2,0	450	15,0-15,1
ca.66 (2a)	14,0	1040-1050								
	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

G14

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 KHD 20,2 k
1. Edition

En

PE 8 P 130 A 620/4 LS 485 RS 250/1000 P1A 422 R
Komb.-Nr. 0 401 878 125
1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company KHD
engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0			
250	5,8-6,0	2,0-2,6	1,0(1,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7 x = 5,0	-	-	-	FH ca.24	250	5,9	1000	15,0-15,1
							250	5,8-6,0	420	16,2-16,8
VHca.58							400-460	= 2,0	550	15,0-15,1
FH full	14,0	1040-1050								
(2a)	4,0	1105-1135								
	1270	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

Test Specifications Fuel Injection Pumps and Governors

(1A)

40

WPP 001/4 KHD 30,4 m
1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-600 P8A 322 R
Komb.-Nr. 0 401 870 081
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes:
company KHD
engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 30	300	5,2	600	15,0-15,1
	x = 4,0						300	5,6-5,8	220	16,2-16,8
ca. 65 (2a)	14,0	640-650					305-365	5=2,0	350	15,0-15,1
	4,0	660-690								
	820	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		640-650*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

G16

5A6

Test Specifications Fuel Injection Pumps and Governors

40

(1A)

WPP 001/4 KHD 30,4 m 1
1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-750 P9A 322 R
Komb.-Nr. 0 401 870 082
1-10-5-7-2-11-6-8-3-12-4-9 je 30° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,7	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,2-16,8
							300-350	=2,0	450	15,0-15,1
ca. 63 (2a)	14,0	790-800								
	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

G17

G17

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP C01/4 KHD 30,4 m 2
1. Edition
En

PE 12 P 130 A 920 RS 486 RSUV 300-750 POA 322-3
Komb.-Nr. 0 401 870 087
1-10-5-7-2-11-6-8-3-12-4-9 je 30° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes company KHD engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,7	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,2-16,8
							300-350	=2,0	450	15,0-15,1
ca. 53 (2a)	14,0	790-800								
	4,0	820-850								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

G18

G18

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 30,4 m 4

1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-750 P 9 A 350
Komb.-Nr. 0 401 870 084
1-10-5-7-2-11-6-8-3-12-4-9 30° ± 0,5° (± 0,75°)

supersedes
company KHD
engine BA 12 M 816

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,2	750	15,0-15,1
	X = 4,0						300	5,6-5,8	280	16,2-16,8
ca. 63	14,0	790-800					315-375	=2,0	450	15,0-15,1
(2a)	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

G19

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 m 5

1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-750 P 9 A 350-1
Komb.-Nr. 0 401 870 088
1-10-5-7-2-11-6-8-3-12-4-9 30° ± 0,5° (± 0,75°)

supersedes
company KHD
engine BA 12 M 816

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,2	750	15,0-15,1
	X = 4,0						300	5,6-5,8	280	16,2-16,8
ca. 53	14,0	790-800					315-375	=2,0	450	15,0-15,1
(2a)	4,0	830-860								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

3.86

G20

Tlo

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 30,4 m 6

1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-1000 P0A 352
Komb.-Nr. 0 401 870 085

supersedes

company KHD

engine BA 12 M 816

1-10-5-7-2-11-6-8-3-12-4-9 je 30°±0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	X = 2,0						300	5,6-5,8	280	16,2-16,8
ca. 67 (2a)	14,0	1040-1050					325-385	=2,0	450	15,0-15,1
	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

G21

G21

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 30,4 n

1. Edition

En

PE 12 P 130 A 920 RS 486 RS 250/1000 P 1 A 422 R
Komb.-Nr. 0 401 870 086

supersedes
company KHD
engine BA 12 M 816

1-10-5-7-2-11-6-8-3-12-4-9 je 30°±0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
250	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	FH ca.24	250	5,8	1000	15,0-15,1
	X = 5,0						250	5,7-5,9	420	16,2-16,8
VHca.58							400-460	=2,0	550	15,0-15,1
FH full (2a)	14,0	1040-1050								
	4,0	1105-1135								
	1270	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 20,2 l
1. Edition

PE 8 P 130 A 620/4 LS 488 RSV 300-1000 P 4 A 460-1 En
Komb.-Nr. 0 401 878 126

supersedes
company KHD
engine BA 8 M 816

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je 45° ±0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
250	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 26	250	5,2	1000	15,0-15,1
	X = 5,0						250	5,6-5,8	350	16,2-16,8
ca. 64 (2a)	14,0	1040-1050					365-425	=2,0	500	15,0-15,1
	4,0	1095-1125								
	1260	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1040-1050*	-	-	-	-	-	-
Test specifications on request.								

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

G23

G23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 8 P..LS 488 +RSV..P 4 A 460-1	0,90	0,45 0	15,0-15,1 14,0-14,1 13,0-13,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 KHD 40,5 g 1

1. Edition

En

PE 8 P 130 A 920/5 RS 489 RSUV 300-600 P 8 A 322 R
1-6-4-5-8-3-2-7
0-75-90-120-210-225-315-345° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA 16 M 816
Komb.-Nr. 0 401 878 131

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 30	300	5,2	600	15,0-15,1
	X = 4,0						300	5,6-5,8	220	16,2-16,8
ca. 65 (2a)	14,0	640-650					305-365	=2,0	350	15,0-15,1
	4,0	660-690								
	825	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request. Pumps operates in tandem.		640-650*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

H1

H1

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 40,5 g 3
1. Edition

PE 8 P 130 A 920/5 RS 489 RSUV 300-750 POA 322-3 En

supersedes

company KHD

engine BA 16 M 816

Komb.-Nr. 0 401 878 136

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7
0 -75 -90 -120-210-225-315-345° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,7	750	15,0-15,1
	X = 4,0						300	5,6-5,8	280	16,2-16,8
ca. 53	14,0	790-800					300-350	=2,0	450	15,0-15,1
(2a)	4,0	820-850								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request. Pumps operates in tandem.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

H2

H2

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 KHD 40,5 g 4

1. Edition

En

PE 8 P 130 A 920/5 RS 489 RSUV 300-1000 POA 348
1-6-4-5-8-3-2-7
0-75-90-120-210-225-315-345° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA 16 M 816
Komb.-Nr. 0 401 878 129

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	300	5,2	1000	15,0-15,1
	X = 2,0						300	5,6-5,8	280	16,2-16,8
ca. 67 (2a)	14,0	1040-1050					325-385	=2,0	450	15,0-15,1
	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request. Pumps operates in tandem.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

H3

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 g 5

1. Edition

En

PE 8 P 130 A 920/5 RS 489 RSUV 300-750 P 9 A 350
1-6 - 4- 5 - 8 - 3 - 2 - 7
0-75-90-120-210-225-315-345° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company KHD
engine BA 16 M 816
Komb.-Nr. 0 401 878 133

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,2	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,2-16,8
ca. 63	14,0	790-800					315-375	= 2,0	450	15,0-15,1
(2a)	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	790-800 *	-	-	-	-	-	-
Test specifications on request. Pumps operates in tandem.								

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

H4

H4

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 g

1. Edition

En

PE 8 P 130 A 920/5 RS 489 RSUV 300-1000 POA 352

supersedes-

company KHD

engine BA 16 M 816

Komb.-Nr. 0 401 878 130

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7

0 -75 -90 -120-210-225-315-345° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1	0,6(1,0)			
300	5,6-5,8	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	X = 2,0						300	5,6-5,8	280	16,2-16,8
ca. 67 (2a)	14,0	1040-1050					325-385	=2,0	450	15,0-15,1
	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Adjust according to the engine records.		1040-1050*	-	-	-	-	-	-
Pumps operates in tandem.								

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

H5

H5

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 K

5. Edition En

PE 8 P 120 A 320 LS 3807 RQV 300-1150 PA 545

supersedes 4.85

1-8-7-2-6-3-5-4 je 45° ± 0,5° (± 0,75°)

company: Daimler-Benz

engine: OM 422 A

243 kW (330 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 Komb.-Nr. 0 401 848 732

Note VDT-I-420/117!

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,7+0,1	15,8-16,0	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			
600						
900	-	C, Sp. 1 - 5	0,7(1,2)			
500						

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings (New version - with auxiliary max-speed governor spring)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 17	100	min.6,7	300	1,6-1,8
							300	5,0-5,2	800	6,0-6,2
ca. 54	9,7	1190-1200							1200	8,1-8,3
	4,0	1235-1265					335-405 = 2,0		1260	9,9
	1350	0-1,0								
						(3a)				

Torque control travel a = 0,70 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9	
LDA	0,7 bar	1190-1200*	LDA	0,7 bar	100	140,0-160,0	1150	10,7+0	1
1150	157,5-159,5		900	165,0-169,0		(136,0-164,0)	600	11,4+0	1
	(154,5-162,5)			(162,0-172,0)			900	10,8+0	2
LDA	0,7 bar		LDA	0 bar					
600	167,0-173,0		500	139,0-141,0					
	(164,0-176,0)			(136,0-144,0)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.86

H6

B. Governor Settings (Old version - without auxiliary max-speed governor spring)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm (1a) rev/min (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1190	15,2-17,8	-	-	-	ca. 17	100	min. 6,7	300	1,6-1,8
ca. 54	9,7	1190-1200					300	5,0-5,2	800	6,0-6,2
	4,0	1235-1265					335-405=2,0		1200	8,1-8,3
	1350	0-1,0							1260	9,9
						(3a)				

(1)

Torque control travel a = 0,70 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1150	0,7 bar	1190-1200*	LDA 900	0,7 bar	100	140,0-160,0	1150	10,7+0,1
	157,5-159,5			165,0-169,0		(136,0-164,0)	600	11,4+0,1
	(154,5-162,5)			(162,0-172,0)			900	10,8+0,2
LDA 600	0,7 bar		LDA 500	0 bar				
	(167,0-173,0)			139,0-141,0				
	(164,0-176,0)			(136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm
PE8P..LS 3807 + RQV..PA 545	0	0,40	10,3-10,4
		0,47	10,4-10,5
			10,9-11,1

En

H7

PE 8 P 120 A 320 LS 3807 RQV 300-1150 PA 545-1

1-8-7-2-6-3-5-4- je 45° ± 0,5° (± 0,75°)

supersedes 4.85

company: Daimler-Benz

engine: OM 422 LA 276 kW

Komb.-Nr. 0 401 848 754

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Note VDT-I-420/ 117!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Cyl.8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	18,2-18,4	0,5(0,9)			
300	4,8-5,0	1,2-2,0	0,8(1,2)			
750 500	-	C, Sp. 4 u.5	(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings (New version - with auxiliary max-speed governor spring)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 17	100 300	min.6,5 4,8-5,0	300 800	1,6-1,8 6,0-6,2
ca. 55	11,0 4,0 1400	1190-1200 1235-1265 0-1,0				(3a)		330-400=2,0	1200 1270	8,6-8,8 10,0

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 182,0-184,0 (179,0-187,0)	1190-1200*	LDA 750	0,7 bar 195,0-198,0 (192,0-201,0)	100	140,0-160,0 (136,0-164,0)	1150 750	12,0+0,1 12,4+0,1
			LDA 500	0 bar 141,0-143,0 (138,0-146,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

H8

B. Governor Settings (Old version - without auxiliary max-speed governor spring) -2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 11	100	min. 6,5	300	1,6-1,8
ca. 65	11,0	1190-1200					300	4,8- 5,0	800	4,6-5,0
	4,0	1235-1265							1200	8,4-8,7
	1400	0-1,0				320-460			1265	9,9
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1190-1200*	LDA	0,7 bar	100	140,0-160,0	1150	12,0+0,1
1150	182,0-184,0		750	195,0-198,0		(136,0-164,0)	750	12,4+0,1
	(179,0-187,0)			(192,0-201,0)				
			LDA	0 bar				
			500	141,0-143,0				
				(138,0-146,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm
PE 8 P..LS 3807 +RQV..PA 545-1	0		10,5-10,7
		0,40	11,1-11,4
		0,55	12,2-12,6

En

H9

H9

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d
6. Edition
En

PE 10 P 110 A 320 LS 3818 RQV 300-1150 PA 486-2

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)
Komb.-Nr. 0 401 849 706
Note VDT-I-420/117!

supersedes 1.85
company: Daimler-Benz
engine: OM 423
261 kW (355 PS)
Komb.-Nr. 0 401 849 706

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Cyl.10; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	12,4-12,6	0,4 (0,8)			
300	8,5-8,7	1,4-2,2	0,4 (0,7)			
600	-	C, Sp. 4 + 5	0,6 (0,9)			
900	-					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings (New version - with auxiliary max-speed governor spring)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 23	100	min.10,2	300	1,6-1,8
							300	8,5-8,7	800	5,8-6,2
ca. 55	11,1	1190-1200					430-490	= 2,0	1200	8,2-8,4
	4,0	1235-1265							1260	10,0
	1400	0 - 1,0				(3a)				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) Intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
1150	124,0-126,0 (121,5-128,5)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0)	1150	12,1+0,1
							600	12,5+0,1
			900	118,0-123,0 (115,0-126,0)			900	12,4+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.86

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B. Governor Settings (Old version - without auxiliary max-speed governor spring)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 19	100	min.10,2	250	1,0-1,2
							300	8,5-8,7	550	3,4-3,7
ca. 65	11,1	1190-1200							850	4,9-5,3
	4,0	1240-1270				330-470			1150	7,6
	1400	0-1,0								
						(3a)				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)		
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1150	124,0-126,0	1190-1200*	600	110,0-114,0	100	140,0-160,0	1150	12,1+0	1
	(121,5-128,5)			(107,0-117,0)		(136,0-164,0)	600	12,5+0	1
			900	118,0-123,0			900	12,4+0	2
				(115,0-126,0)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm

En

Testoil-ISO 4113

H11

H11

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 9,0 a
2. Edition
En

PE 6 P 120 A 320 RS 7102 RQV 200-1100 PA 712-1
Komb.-Nr. 0 402 746 800

supersedes 3.85
company: Scania
engine: DS 9 01

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0+0,1	16,3-16,5	0,6(0,9)			3,3±0,1 (3,0-3,5)
225	4,8-5,0	1,5-1,9	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever ③a 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 10	100	min.6,3	225	0,9-1,0
							225	4,8-5,0	350	2,3-3,2
ca. 63	11,0	1140-1150					300-360	=2,0	420	3,7-4,5
	4,0	1280-1310							550	5,0-5,2
	1450	0-1,0							1140	8,8

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 163,0-165,0 (160,0-168,0)	1140-1150*	LDA 1100	0,9 bar 164,0-172,0 (162,0-174,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 141,0-145,0 (139,0-147,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 7102 +RQV..PA 712-1	0,90	0 0,42 0,38	12,0-12,1 11,3-11,4 11,7-11,8 11,5-11,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

H13

Test Specifications Fuel Injection Pumps and Governors

En

PE 6 P 120 A 720 RS 7118 RQV 250-1100 PA 785

Komb.-Nr. 0 402 646 831

supersedes–
company: Steyr
engine: WD 615.68
228 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tesoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,3-4,5 (4,25-4,45) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,7+0,1	18,1-18,3	0,5(0,9)			3,3 ± 0,1
250	5,7-5,9	1,5-2,1	0,8(1,2)			(3,0-3,5) **

** Due to smoothing of the sealing edge, the initial spring tension with a new delivery-valve holder must be adjusted to 2,9-3,1 mm.

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 14	100	min.7,2	200	0,7-0,9
ca. 48	11,7	1140-1150					250	5,7-5,9	500	3,1-3,3
	4,0	1225-1255					275-375		800	5,5-5,7
	1350	0-1,0							1100	8,0

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	1,2 bar 181,0-183,0 (178,0-186,0)	1140-1150*	LDA 700	1,2 bar 190,0-196,0 (187,0-199,0)	100	225,0-265,0 (221,0-269,0)	-	-
			LDA 700	0 bar 143,0-145,0 (140,0-148,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

H14

H14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE6P..RS 7118 +RQV..PA785	1,20	0 0,57 0,36	12,7-12,8 10,3-10,4 12,1-12,2 10,8-11,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

H15

En H15

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VOL 3,6 g 1
4. Edition
En

Testoil-ISO 4113

Overflow temperature 45° C

supersedes 4.84
company: Volvo
engine: TAMD 40 B - 121 kW

VE 6/11 F 1800 L 19-7
0 460 416 025

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,6 - 3,0	mm		
1.2 Supply-pump pressure	1500	6,2 - 6,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	80,5-81,5	cm³/1000 strokes		3,0 (3,5)
1.4 Idle regulation	400	8,5-12,5	cm³/1000 strokes		3,0 (3,5)
1.5 Full-speed regulation	2050	7,5-14,5	cm³/1000 strokes		
1.6 Start	100	min. 60,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1770
	mm	0,7-1,5 (0,4-1,8)	(2,1-3,5)	3,6-4,4 (3,3-4,7)
2.2 Supply pump	n = rev/min	400	1770	
	bar (kgf/cm²)	2,3-2,9	7,1-7,7	
Overflow delivery	n = rev/min	600	1800	
	cm³/10 s	41-83 (26-98)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2130	max. 2,5		
	2050		(6,5-15,5)	
	1900	43,5-49,5	(42,0-51,0)	
	1770	75,5-77,5	(73,9-79,1	
	1500		(78,4-83,6)	
	600	70,0-74,0	(68,6-75,4)	
switch-off				
Idle stop	500	max. 2,5		
	400		(6,0-15,0)	
End stop	120	min. 60		
	220	max. 60		

2.4 Solenoid — cut-in voltage min. 10 V
rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,9-6,1
MS	0,9-1,1
SVS	max. 2,3
A XK	18,7-20,7
B XL	10,9-14,2

Observations

H16

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VOL 3,6 g 2
1. Edition
En

Testoil-ISO 4113

VE 6/11 F 1800 L 19-10 Overflow temperature 45° C
0 460 416 045

supersedes
company: Volvo
engine: TAMD 40 B -121 kW

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,6 - 3,0	mm		
1.2 Supply-pump pressure	1500	6,2 - 6,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	80,5-81,5	cm³/1000 strokes		3,0 (3,5)
1.4 Idle regulation	400	8,5-12,5	cm³/1000 strokes		3,0 (3,5)
1.5 Full-speed regulation	2050	7,5-14,5	cm³/1000 strokes		
1.6 Start	100	min. 60,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1770
	mm	0,7-1,5 (0,4-1,8)	(2,1-3,5)	3,6-4,4 (3,3-4,7)
2.2 Supply pump	n = rev/min	400	1770	
	bar (kgf/cm²)	2,3-2,9	7,1-7,7	
Overflow delivery	n = rev/min	600	1800	
	cm³/10 s	41-83 (26-98)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2130	max. 2,5		
	2050		(6,5-15,5)	
	1900	43,5-49,5	(42,0-51,0)	
	1770	75,5-77,5	(73,9-79,1)	
	1500		(78,4-83,6)	
	600	70,0-74,0	(68,6-75,4)	
switch-off				
Idle stop	500	max. 2,5		
	400		(6,0-15,0)	
End stop	120	min. 60		
	220	max. 60		

2.4 Solenoid ___ cut-in voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,9-6,1
MS	0,9-1,1
SVS	max. 2,3
A XK	18,7-20,7
B XL	10,9-14,2

Observations

24 V Pulling electromagnet

H17

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Vol 3,6 p 1
1. Edition
En

Testoil-ISO 4113

VE 6/11 F 1625 L 19-11 Overflow temperature 45° C
0 460 416 052

supersedes –
company: Volvo-Penta
engine: TAMD 40 B - 105 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02(0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,6-3,0	mm		
1.2 Supply-pump pressure	1500	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–	–	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	72,5-73,5	cm³/1000 strokes		3,5
1.4 Idle regulation	400	8,5-12,5	cm³/1000 strokes		3,5
1.5 Full-speed regulation	1900	15,0-23,0	cm³/1000 strokes		
1.6 Start	100	min. 60,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1625
	mm	0,7-1,5(0,4-1,8)	(2,1-3,5)	3,0-3,8(2,7-4,1)
2.2 Supply pump	n = rev/min	400		1625
	bar (kgf/cm²)	2,3-2,9		6,7-7,3
Overflow delivery	n = rev/min	600		1625
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2000	max. 10,0	
	1900	(14,5-23,5)	
	1800	32,5-38,5 (31,0-40,0)	
	1625	66,0-69,0 (64,8-70,2)	
	1500	72,5-73,5 (70,3-75,7)	
	600	58,0-62,0 (56,7-63,4)	
switch-off			
Idle stop	580	0	
	500	max. 2,0	
	400	(6,0-15,0)	
End stop	110	min. 60,0	
	210	max. 50,0	

2.4 Solenoid ___ cut-in voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	–
KF	5,9-6,1
MS	0,9-1,1
SVS	max.4,9
A	
B	

Observations
pushing electronagnet
24 V

H18

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Sof 2,5 g
2. Edition
En

Testoil-ISO 4113

VE 4/9 F 2100 R 22-5 Overflow temperature 45° C
0 460 494 109

supersedes 4.82
company: Sofim
engine: 8140.61.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04) mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1800	7,4-7,8	mm		
1.2 Supply-pump pressure	1800	6,3-6,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	2000	37,5-38,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	370	8,0-12,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	2350	19,0-25,0	cm³/1000 strokes		
1.6 Start	100	min. 55,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1800	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	1800	2100
	mm	1,8-2,8(1,6-3,0)	(5,9-8,3)	8,4-9,2(8,1-9,5)
2.2 Supply pump	n = rev/min	400		2100
	bar (kgf/cm²)	2,9-3,5		6,9-7,5
Overflow delivery	n = rev/min	500		2100
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	max.4,5		
	2350		(18,0-26,0)	
	2100	36,7-39,3	(35,7-40,3)	
	2000		(35,7-40,3)	
	1100	43,5-46,5	(42,7-47,3)	
	600	35,3-35,8	(33,8-39,8)	
switch-off	2100	0		
Idle stop	370		(6,0-14,0)	
	420	min. 1,5		
	500	max. 3,0		
End stop	400	min. 37		
	480	32,0-38,0		

2.4 Solenoid — cut-in voltage min 10 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,4-5,6
MS	1,7-1,9
SVS	max.2,7
A	
B	

Observations

H19

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,3b1
3. Edition
En

Testoil-ISO 4113

VE 6/10 F 2400 L 32 Overflow temperature 45° C
0 460 406 003

supersedes 3.85
company: VW
engine: 087/10

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	–	–	cm³/1000 strokes		
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0	cm³/1000 strokes		
1.6 Start	2700	6,0-12,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	–	–			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,8-1,6 (0,5-1,9)	(2,8-3,2)	5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,5-8,1
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2700	(5,0-13,0)	
	2600	15,0-22,0 (14,5-22,5)	
	2400	22,0-24,0 (20,8-25,2)	
	1500	(26,8-31,2)	
	750	26,0-29,0 (24,5-30,5)	
switch-off			
electr.	400	0	
Idle stop	375	(4,0-12,0)	
	600	1,0-7,0	
End stop	400	min. 20,0	
	500	max. 25,0	

2.4 Solenoid — cut-in voltage min. 10,0 V
rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	
MS	6,4-6,6
	1,4-1,6
SVS	max. 3,0
A XK	18,5-20,5
B XL	9,2-12,9

Observations

H20

H20

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,3 b
5. Edition
En

Testoil-ISO 4113

VE 6/10 F 2400 L 32-1 (P)
0 460 406 009; 010

supersedes 3.85
company: VW
engine: 087/10 Autom.

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0	cm³/1000 strokes		
1.6 Start	2700	6,0-12,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,8-1,6 (0,5-1,9)	(2,3-3,7)	5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,5-8,1
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2700	(5,0-13,0)	
	2600	15,0-22,0 (14,5-22,5)	
	2400	22,0-24,0 (20,8-25,2)	
	1500	(26,8-31,2)	
	750	26,0-29,0 (24,5-30,5)	
switch-off			
mech.	2400	0	
electr.	400	0	
Idle stop	375	(4,0-12,0)	
	600	max. 4,0	
End stop	400	min. 20	
	500	max. 25	

2.4 Solenoid — cut-in voltage: min 10 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max. 3,0
A XK	18,5-20,5
B XL	9,2-12,9

Observations
Stop check (lever) at n = 2400 min/1

BOSCH

4.86

H21

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 k

3. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 L 32-2 Overflow temperature 45° C

0 460 406 037

supersedes 3.85
company: VWW
engine: 087/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–		cm³/1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		max. 2,0
1.5 Full-speed regulation	2700	6,0-12,0	cm³/1000 strokes		
1.6 Start	100	min.35	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,8-1,6 (0,5-1,9)	(2,3-3,7)	5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,5-8,1
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 4,0	
	2700	(5,0-13,0)	
	2400	22,0-24,0 (20,7-25,3)	
	1500	(26,7-31,3)	
	750	26,0-29,0 (24,5-30,5)	
switch-off	70-400	0	
Idle stop	375	(4,0-12,0)	
	600	max. 4,0	
End stop	400	min. 20,0	
	500	max. 25,0	

2.4 Solenoid	cut-in voltage	min. 10 V
		rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,4-6,6
MS	1,5-1,7
SVS	3,6
A	
B	

Observations

H22

H22

Test Specifications Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

VE 6/10 F 2400 L 32-3
0 460 406 038

Overflow temperature 45° C

supersedes 3.85
company: VW
engine: 087/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–		cm³/1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		max. 2,0
1.5 Full-speed regulation	2700	6,0-12,0	cm³/1000 strokes		
1.6 Start	100	min.35	cm³/1000 strokes		
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,8-1,6 (0,5-1,9)	(2,3-3,7)	5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,5-8,1
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 4,0	
	2700	(5,0-13,0)	
	2400	22,0-24,0 (20,7-25,3)	
	1500	(26,7-31,5)	
	750	26,0-29,0 (24,5-30,5)	
switch-off			
electr.	70-400	0	
mech.	2400	0	
Idle stop	600	max. 4,0	
	375	(4,0-12,0)	
End stop	400	min. 20,0	
	500	max. 25,0	
2.4 Solenoid — cut-in voltage		min 10 V rated voltage 12 V.	

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,4-6,6
MS	1,5-1,7
SVS	3,6
A	
B	

Observations

H23

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,3 A
2.Edition
En

Testoil-ISO 4113

VE 4/8 F 2500 R 61 Overflow temperature 45° C
0 460 484 006

supersedes
company: FIAT/FIASA
engine: X 8/29

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1600	5,6-6,0	mm		
1.2 Supply-pump pressure	1600	4,5-5,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1600	20,0-21,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	8,0-14,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 29,0	cm³/1000 strokes		
1.6 Start	2650	9,0-15,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1600	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1600	2000	2400
	mm	2,4-3,2(2,1-3,5)	(5,1-6,5)	7,8-8,4(7,4-8,8)	9,4-10,2(9,1-10,5)
2.2 Supply pump	n = rev/min	400			2500
	bar (kgf/cm²)	1,1-1,7			7,2-7,8
Overflow delivery	n = rev/min	500			2500
	cm³/10 s	55-110(40-125)			55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800-2950			
	2750	2,0-8,0	(1,0-9,0)	
	2650		(8,0-16,0)	
	2500	19,3-21,7	(18,2-22,8)	
	2000	20,0-22,0	(18,7-23,3)	
	1600		(18,2-22,8)	
	600	16,0-19,0	(14,5-20,5)	
switch-off	2500	0		
Idle stop	550	0		
	450	max.4,0		
	350		(7,0-15,0)	
End stop	400	min.24,0		
	500	max.26,0		

2.4 Solenoid — cut-in voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,5
SVS	max.3,0
* FH	1,8-2,4
^{A}XK	20,2-22,2
^{B}XL	8,8-12,2

Observations

* operating stroke (cold-start accel.)

BOSCH

H24

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 5,8 t 1

1. Edition

En

Test oil ISO 4113

VE 6-12 F 1350 R 64-1 Overflow temperature 45° C

0 460 426 089

supersedes -

company: IHC

engine: D 358/PC 11

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1150	5,2-5,6	mm		
1.2 Supply-pump pressure	1150	5,6-6,2	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1150	84,0-85,0	cm³/1000 strokes		3,5 (4,5)
1.4 Idle regulation	500	14,5-20,5	cm³/1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1430	44,0-50,0	cm³/1000 strokes		
1.6 Start	100	min. 100,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1150	1300
	mm	1,6-2,4 (1,3-2,7)	(4,7-6,1)	5,3-6,1 (5,0-6,4)
2.2 Supply pump	n = rev/min	400	1300	
	bar (kgf/cm²)	2,7-3,3	6,0-6,6	
Overflow delivery	n = rev/min	500	1350	
	cm³/10 s	55-138 (40-163)	55-138 (40-158)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1540	max. 2,0		
	1480	9,0-17,0	(8,0-18,0)	
	1430		(42,0-52,0)	
	1300	80,0-83,0	(78,5-84,5)	
	1150		(81,5-87,5)	
	800	77,0-81,0	(76,0-82,0)	
	500	65,0-70,0	(63,7-71,3)	
switch-off				
Idle stop	570	max. 1,0		
	520	min. 4,0		
	500		(12,5-22,5)	
End stop	250	min. 100		
	350	max. 80		

2.4 Solenoid — cut-in voltage min. 10 V, rated voltage 12 V

3. Dimensions

for assembly and adjustment mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,0-1,2
SVS	max. 6,0
A XK	20,2-22,2
B XL	15,8-19,8

Observations

J1

4.86

J1

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 BMW 2,4c
2. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 R 118-1
0 460 406 041 Overflow temperature 45° C
DHK 1 688 901 022/130 bar
Fuel injection test tubing 1 680 750 073

supersedes 7.84
company: BMW-USA Ford
engine: M 21 D 24

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	6,5-6,9	mm	1,050	
1.2 Supply-pump pressure	1500	5,9-6,5	bar (kgf/cm²)	1,050	
1.3 Full-load delivery with charge-air pressure	1500	39,5-40,5	cm³/1000 strokes	1,050	max. 3,0
Full-load delivery without charge-air pressure	500**	22,0-23,0	cm³/1000 strokes	0	max. 3,0
1.4 Idle regulation	400**	6,0-10,0	cm³/1000 strokes	0	
1.5 Full-speed regulation	2600	17,0-23,0	cm³/1000 strokes	1,050	max. 5,0
1.6 Start	250**	35,0-37,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	1500	1500**	2000
	mm	3,8-4,6(3,5-4,9)	(6,0-7,4)	0	8,2-9,0(7,9-9,3)
2.2 Supply pump	n = rev/min	500		2300	
	bar (kgf/cm²)	4,4-5,0		7,2-7,8	
Overflow delivery	n = rev/min	500		2400	
	cm³/10 s	42-83(27-98)		55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	7,0-13,0	(6,0-14,0)	1,050
	2600		(16,0-24,0)	1,050
	2400	39,5-41,5	(38,2-42,8)	1,050
	1500		(37,7-42,3)	1,050
	750*	33,0-34,0	(30,5-36,5)	0,5
	500**		(19,5-25,5)	0
switch-off				
Idle stop	400**		(4,0-12,0)	
Exhaust gas recirculation driver	450**	max. 3,0		
	850***	16,0-18,0(15,0-19,0)		
Start Inspection point	100**	27,0-37,0(20,0-42,0)		
	400**	28,0-38,0(25,0-41,0)		
Limit stop	480**	19,2-23,8(16,5-26,5)		

2.4 Solenoid — cut-in voltage: min 10 V; rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,4-1,6
SVS	3,0
A	
B	

Observations
* LDA-stroke 7,5 mm
** Supply 12 volts to the solenoid valve
***Adjustment point for AGR back

See page 2

J2

J2

Pull control lever in full-load direction until gauge fits over drive hub and connection piece of housing cover. Measure fuel delivery.
(Do not apply voltage to solenoid-operated valve.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 BMW 2,4 c 1
1. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 R 118-2
0 460 406 050 Overflow temperature 45° C
DHK 1 688 901 022
Fuel injection test tubing 1 680 750 073

supersedes
company: BMW-USA Ford
engine: M 21 D 24

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	6,5-6,9	mm	1,050	
1.2 Supply-pump pressure	1500	5,9-6,5	bar (kgf/cm²)	1,050	
1.3 Full-load delivery with charge-air pressure	1500	39,0-40,0	cm³/1000 strokes	1,050	max. 3,0
Full-load delivery without charge-air pressure	500**	21,5-22,5	cm³/1000 strokes	0	max. 3,0
1.4 Idle regulation	400**	6,0-10,0	cm³/1000 strokes	0	
1.5 Full-speed regulation	2600	17,0-23,0	cm³/1000 strokes	1,050	max. 5,0
1.6 Start	250**	35,0-37,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	1500	1500**	2000
	mm	3,8-4,6(3,5-4,9)	(6,0-7,4)	0	8,2-9,0(7,9-9,3)
2.2 Supply pump	n = rev/min	500		2300	
	bar (kgf/cm²)	4,4-5,0		7,2-7,8	
Overflow delivery	n = rev/min	500		2400	
	cm³/10 s	42-83(27-98)		55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	7,0-13,0	(6,0-14,0)	1,050
	2600		(16,0-24,0)	1,050
	2400	39,5-41,5	(38,2-42,8)	1,050
	1500		(37,2-41,8)	1,050
	750*	32,5-33,5	(30,0-36,0)	0,5
	500**		(19,0-25,0)	0
switch-off				
Idle stop	400**		(4,0-12,0)	
	450**	max. 3,0		
Exhaust gas recirculation driver	850***	16,0-18,0	(15,0-19,0)	
Start Inspection point	100**	27,0-37,0	(20,0-42,0)	
	400**	28,0-38,0	(25,0-41,0)	
Limit stop	480**	19,2-23,8	(16,5-26,5)	

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,4-1,6
SVS	3,0
A	
B	

Observations

* LDA-stroke 7,5 mm
** Supply 12 volts to the solenoid valve
***Adjustment point for AGR

back
See page 2

J4

J4

Pull control lever in full-load direction until gauge fits over drive hub and connection piece of housing cover. Measure fuel delivery.
(Do not apply voltage to solenoid-operated valve.

Testoil ISO 4113

VE 6/12 F 1400 R 120-4 Overflow temperature 45° C

0 460 426 036

supersedes: 1.85
company: MAN
engine: D0 226 MC

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02(0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	3,5-3,9	mm	0,8	
1.2 Supply-pump pressure	800	5,1-5,7	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1000	112,0-113,0	cm³/1000 strokes	0,8	4,0 (4,5)
Full-load delivery without charge-air pressure	630	85,5-86,5	cm³/1000 strokes	0	
1.4 Idle regulation	300	10,0-16,0	cm³/1000 strokes	0	3,5 (4,5)
1.5 Full-speed regulation	1440	92,0-100,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 70,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1100
	mm	1,2-2,0 (0,9-2,3)	(3,0-4,4)	4,9-5,7 (4,6-6,0)
2.2 Supply pump	n = rev/min	500		1100
	bar (kgf/cm²)	3,8-4,4		6,1-6,7
Overflow delivery	n = rev/min	500		1400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1650	max. 1,0	0,8
	1550	26,0-34,0 (25,0-35,0)	0,8
	1440	(91,0-101,0)	0,8
	1400	108,0-112,0 (107,0-113,0)	0,8
	1000	(109,5-115,5)	0,8
	800	110,0-114,0 (109,0-115,0)	0,8
	630	112,0-116,0 (110,3-117,7)	0,8
	* 630	106,5-107,5 (103,3-110,7)	0,4
	630	(82,3-89,7)	0
switch-off			
Idle stop	300	(8,0-18,0)	
	350	max. 5,0	
	400	max. 1,0	
End stop	230	min. 100	
	400	max. 100	

2.4 Solenoid ___ cut-in voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,7 - 6,0
MS	1,0 - 1,2
SVS	
A	25,0-27,0
B	13,5-16,8

Observations

LDA-stroke: 4,5 mm

J6

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 BMW 2,4a
2. Edition
En

Testoil-ISO 4113

VE 6/10 F 2400 R 121
0 460 406 022
DHK 1 688 901 022
Fuel injection test tubing 1 680 750 073

Overflow temperature 45° C

superseded 10.83
company: BMW
engine: M 21 D 24-Europa

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,1-4,5	mm	1,050	
1.2 Supply-pump pressure	1500	6,1-6,5	bar (kgf/cm²)	1,050	
1.3 Full-load delivery with charge-air pressure	1500	39,5-40,5	cm³/1000 strokes	1,050	max. 3,0
Full-load delivery without charge-air pressure	500	28,0-29,0	cm³/1000 strokes	0	max. 3,0
1.4 Idle regulation	400	6,0-10,0	cm³/1000 strokes	0	
1.5 Full-speed regulation	2600	17,0-23,0	cm³/1000 strokes	1,050	max. 5,0
1.6 Start	250	35,0-37,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500*	750	1000*	1500	2300
LDA=1,050 bar	mm		1,3-2,1(1,0-2,4)		(3,6-5,0)	7,4-8,2 (7,1-8,5)
2.2 Supply pump	n = rev/min	500				2300
LDA=1,050 bar	bar (kgf/cm²)	3,2-3,6				8,1-8,5
Overflow delivery	n = rev/min	500				2300
	cm³/10 s	41-83(26-98)				55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	7,0-13,0	(6,0-14,0)	1,050
	2600		(16,0-24,0)	1,050
	2400	39,5-41,5	(38,2-42,8)	1,050
	1500		(37,7-42,3)	1,050
	750**	34,0-35,0	(31,5-37,5)	0,50
	500		(25,5-31,5)	0
switch-off				
Idle stop	400		(4,0-12,0)	
	475	max. 3,0		*
End stop	100	27,0-37,0	(20,0-42,0)	
	400	32,0-42,0	(29,0-45,0)	
	480	25,2-29,8	(22,5-32,5)	**

2.4 Solenoid — cut-in voltage: min 10 V
rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,5-1,7
SVS	4,0
A XK	20,2-22,2
B XL	9,5-12,8

Observations
* Check hydr. cold-start accelerator for operation: See page 2
** LDA-stroke 4,3 mm Use adjusting nut (46) to correct.

J7

J7

* Test hydr. cold-start accelerator:

Apply 12 V to magnet of hydr. cold-start accelerator.
500 1/min 1.9 - 2.9 (1.7-3.1)
1000 1/min 3.7 - 4.7 (3.5-4.9)

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6p2
1. Edition
En

Testoil-ISO 4113

VE 6/12 F 1100 R 166 Overflow temperature 45° C
0 460 426 037

supersedes
company: MAN
engine: DO 226 MTE 51

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	700	3,3-3,7	mm		
1.2 Supply-pump pressure	700	4,3-4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	700	90,5-91,5	cm³/1000 strokes		4,0 (4,5)
1.4 Idle regulation	300	13,0-19,0	cm³/1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1230	18,0-24,0	cm³/1000 strokes		
1.6 Start	100	min. 80	cm³/1000 strokes		
1.7 Load-dependent port-closing	700	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	700	900
	mm	1,5-2,3 (1,2-2,6)	(2,8-4,2)	3,7-4,5 (3,4-4,8)
2.2 Supply pump	n = rev/min	500	1100	
	bar (kgf/cm²)	3,3-3,9	5,9-6,5	
Overflow delivery	n = rev/min	500	1100	
	cm³/10 s	55-138 (40-153)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1280	max. 1,0		
	1230		(16,0-26,0)	
	1170	70,0-78,0	(69,0-79,0)	
	1100	89,5-92,5	(88,0-94,0)	
	900	91,0-95,0	(90,0-96,0)	
	700		(88,0-94,0)	
	500	91,0-95,0	(89,3-96,7)	
switch-off				
Idle stop	300		(11,0-21,0)	
	330	3,0-9,0	(1,0-11,0)	
	370	max. 1,0		
End stop	350	min. 101,0		
	450	max. 101,0		

2.4 Solenoid — cut-in voltage: min. 10 V; rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,7-6,0
MS	0,9-1,1
SVS	
A	
B	

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 5,5p
1. Edition
En

Testoil-ISO 4113

VE 6/11 F 1100 R 181-2 Overflow temperature 45° C
0 460 416 050
DHK: 1 688 901 020

superseded
company: Fiat
engine: 8065.05.297

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	2,9-3,3	mm		
1.2 Supply-pump pressure	800	6,1-6,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
Full-load delivery without charge-air pressure	800	64,8-65,2	cm³/1000 strokes		max. 3,5
1.4 Idle regulation	400	16,0-20,0	cm³/1000 strokes		max. 3,5
1.5 Full-speed regulation	1200	17,0-23,0	cm³/1000 strokes		
1.6 Start	100	min. 100	cm³/1000 strokes		
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	800	1100
	mm	0,6-1,4(0,3-1,7)	(2,4-3,8)	5,3-6,1(5,0-6,4)
2.2 Supply pump	n = rev/min	600		1100
	bar (kgf/cm²)	5,1-5,7		7,4-8,0
Overflow delivery	n = rev/min	500		1100
	cm³/10 s –	42-83(27-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1300	max. 2,5		
	1240	1,5-8,5	(0,5-9,5)	
	1200		(15,5-24,5)	
	1150	38,5-45,5	(37,5-46,5)	
	1080	59,5-62,5	(58,3-63,7)	
	800		(61,6-68,4)	
	500	59,0-62,0	(57,1-63,9)	
switch-off				
Idle stop	520	max. 2,5		
	450	3,0-9,0	(1,5-10,5)	
	400		(13,5-22,5)	
End stop	150	min. 100,0		
	250	max. 60,0		

2.4 Solenoid ___ cut-in voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,2-5,5
MS	1,5-1,7
SVS	5,2
A	
B	

Observations

24 V Pulling electromagnet

J10

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

JAO

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 5,5p1
1. Edition
En

Testoil-ISO 4113

VE 6/11 F 1075 R 181-3 Overflow temperature 45° C
0 460 416 051
DHK: 1 688 901 020

superseded company: Fiat engine: 8065.05.295

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	2,6-3,0	mm		
1.2 Supply-pump pressure	800	5,9-6,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
Full-load delivery without charge-air pressure	800	66,0-67,0	cm³/1000 strokes		max. 3,5
1.4 Idle regulation	450	17,0-21,0	cm³/1000 strokes		max. 3,5
1.5 Full-speed regulation	1180	22,0-28,0	cm³/1000 strokes		
1.6 Start	100	min. 110,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1000
	mm	0,6-1,4(0,3-1,7)	(2,1-3,5)	3,6-4,4(3,3-4,7)
2.2 Supply pump	n = rev/min	500		1000
	bar (kgf/cm²)	4,4-5,0		6,9-7,5
Overflow delivery	n = rev/min	500		1075
	cm³/10 s	42-83(27-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1260	max. 2,5		
	1220	5,0-12,0	(4,0-13,0)	
	1180		(20,5-29,5)	
	1050	57,0-60,0	(55,8-61,2)	
	800		(63,1-69,9)	
	500	70,5-73,5	(68,6-75,4)	
switch-off				
Idle stop	450		(14,5-23,5)	
	475	1,5-7,5	(0- 9,0)	
	500	max.2,5		
End stop	150	min.110,0		
	250	max. 75,0		

2.4 Solenoid ..... cut-in voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,2-5,5
MS	1,5-1,7
SVS	4,2
A	
B	

Observations

24 V Pulling electromagnet

J11

J11

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2,On
1. Edition
En

Testoil-ISO 4113

VE 4/9 F 2200 R 183 Overflow temperature 45° C
0 460 494 160
DHK 1 688 901 022
Fuel injection test tubing 1 680 750 073

supersedes -
company: Renault
engine: J 85-814

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	4,0-4,4	mm	1,0	
1.2 Supply-pump pressure	1400	4,9-5,5	bar (kgf/cm²)	1,0	
1.3 Full-load delivery with charge-air pressure	1400	49,0-50,0	cm³/1000 strokes	1,0	max. 2,0
Full-load delivery without charge-air pressure	600	22,5-23,5	cm³/1000 strokes	0	
1.4 Idle regulation	400	4,0-8,0	cm³/1000 strokes	0	max. 2,5
1.5 Full-speed regulation	2400	23,0-29,0	cm³/1000 strokes	1,0	
1.6 Start	100	min. 60,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2000
LDA=1,0 bar	mm	1,9-2,7(1,6-3,0)	(3,5-4,9)	6,2-7,0(5,9-7,3)
2.2 Supply pump	n = rev/min	400		2000
LDA=1,0 bar	bar (kgf/cm²)	1,8-2,4		6,7-7,3
Overflow delivery	n = rev/min	500		2200
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	max. 2,0		1,0
	2500	max. 17,5		1,0
	2400		(22,0-30,0)	1,0
	2000	45,5-47,5	(44,2-48,8)	1,0
	1400		(47,2-51,8)	1,0
	1000	46,0-49,0	(45,2-49,8)	1,0
	700*	34,0-35,0	(31,5-37,5)	0,3
	600		(20,0-26,0)	0
switch-off				
Idle stop	375	10,0-16,0	(9,0-17,0)	
	400		(2,0-10,0)	
	500	max. 3,0		
End stop	130	min. 40,0		
	240	max. 40,0		
2.4 Solenoid	cut-in voltage	min 10 V rated voltage 12 V.		

3. Dimensions

for assembly and adjustment

Designation	mm
K	5,7-6,0
KF	3,2-3,4
MS	1,4-1,6
SVS	
A	
B	

Observations

* ALDA-stroke = 7,5 mm
Use adjusting nut (46) to correct.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,7 h3
2. Edition
En

Testoil-ISO 4113

VE 4/9 F 2300 R 207 Overflow temperature 45° C
0 460 494 170
DHK 1 688 901 022/130 bar
Fuel injection test tubing 6x2x450 mm

supersedes 3.85
company: Fiat
engine: X 8/34

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,1-4,5	mm		
1.2 Supply-pump pressure	1500	5,3-5,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	29,5-30,5	cm³/1000 strokes		2,5
1.4 Idle regulation	380	10,0-14,0	cm³/1000 strokes		2,5
1.5 Full-speed regulation	2450	19,0-25,0	cm³/1000 strokes		
1.6 Start	100	min. 55	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500	–			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1500	2300
	mm	1,6-2,4(1,3-2,7)	(3,6-5,0)	7,0-7,8(6,7-8,1)
2.2 Supply pump	n = rev/min	600		2300
	bar (kgf/cm²)	3,1-3,7		7,2-7,8
Overflow delivery	n = rev/min	600		2300
	cm³/10 s	41-86(26-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2900	max. 1,5		
	2650	2,0-9,0	(1,5-9,5)	
	2450		(18,0-26,0)	
	2300	31,8-34,2	(30,8-35,2)	
	1500		(27,8-32,3)	
	1000	29,8-32,2	(28,7-33,3)	
	600	30,0-33,0	(28,5-34,5)	
switch-off				
Idle stop	380		(8,0-16,0)	
	400	5,0-11,0	(4,0-12,0)	
	500	max. 1,5		
End stop	300	min. 48		
	400	max. 45		

2.4 Solenoid — cut-in voltage: min 10 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	2,8
A	
B	

Observations

J13

J13

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,3b
En 1. Edition

Testoil-ISO 4113

VE 4/9 F 2300 R 207-1 Overflow temperature 45° C

supersedes company: Fia-Regata
engine: X 8 / 34

0 460 494 196
DHK 1 688 901 022
Fuel injection test tubing 1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,1-4,5	mm		
1.2 Supply-pump pressure	1500	5,3-5,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	29,5-30,5	cm³/1000 strokes		max. 2,5
1.4 Idle regulation	380	10,0-14,0	cm³/1000 strokes		max. 2,5
1.5 Full-speed regulation	2450	19,0-25,0	cm³/1000 strokes		
1.6 Start	100	min. 55,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1500	2300
	mm	1,6-2,4(1,3-2,7)	(3,6-5,0)	7,0-7,8(6,7-8,1)
2.2 Supply pump	n = rev/min	600		2300
	bar (kgf/cm²)	3,1-3,7		7,2-7,8
Overflow delivery	n = rev/min	600		2300
	cm³/10 s -	42-83(27-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2900	max. 1,5		
	2650	2,0-9,0	(1,5-9,5)	
	2450		(18,0-26,0)	
	2300	31,8-34,2	(30,7-35,3)	
	1500		(27,7-32,3)	
	1000	29,8-32,2	(28,7-33,3)	
	600	30,0-33,0	(28,5-34,5)	
switch-off				
Idle stop	380		(8,0-16,0)	
	400	5,0-11,0	(4,0-12,0)	
	500	max. 1,5		
End stop	300	min. 48		
	400	max. 45		

2.4 Solenoid — cut-in voltage min. 10 V
rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,7-1,9
SVS	2,8
A	
B	

Observations

J14

J14

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 x2

1. Edition

En

Tastoil-ISO 4113

VE 4/9 F 2250 R 211 Overflow temperature 45° C
0 460 494 172

supersedes
company: VW
engine: 086 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

		Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel		1500	3,8-4,2	mm	0,75	
1.2 Supply-pump pressure		1500	4,9-5,5	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure		1500	41,5-42,5	cm³/1000 strokes	0,75	max. 2,5
Full-load delivery without charge-air pressure		600	24,5-25,5	cm³/1000 strokes	0	
1.4 Idle regulation	*	A 550	2,5-3,5	cm³/1000 strokes	0	max. 2,0
1.5 Full-speed regulation		2525	13,0-19,0	cm³/1000 strokes	0,75	
1.6 Start		100	min. 35,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing		–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1800	2250
LDA = 0,75 bar	mm	1,8-2,6(1,5-2,9)	(3,3-4,7)	4,8-5,6(4,5-5,9)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	600		2250	
LDA = 0,75 bar	bar (kgf/cm²)	2,3-2,9		7,0-7,6	
Overflow delivery	n = rev/min	600 (0 bar)		2250 (0,75 bar)	
	cm³/10 s	41-86(26-98)		55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	max. 4,0		0,75
	2525		(12,0-20,0)	0,75
	2425	25,0-35,0	(26,0-34,0)	0,75
	2250	35,5-37,5	(34,2-38,8)	0,75
	1500		(39,7-44,3)	0,75
	1500	34,0-37,0	(33,2-37,8)	0
	1000**	34,5-35,5	(32,7-37,3)	0,30
	600	32,5-35,5	(31,0-37,0)	0,75
	600		(22,0-28,0)	0
switch-off				
electr.	70-400	0		
Idle stop	A 500	2,7-4,7		
	B 375	12,0-14,0	(9,0-17,0)	
	B 425	5,5-8,5	(3,0-11,0)	
	C 525	7,0-9,0		
End stop	150	min.35,0		
	350	max.30,0		

2.4 Solenoid — cut-in voltage: min 10 V, rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	K1
KF	5,7-6,0
MS	1,2-1,4
SVS	2,7
A	
B	

Observations:
** LDA-stroke 6,0 mm Use adjusting nut (46) to correct.
*Residual delivery setting idle setting (LFG) as per VDT-I-460/135

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

4.86

J15

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,3a

1. Edition

En

Testoil-ISO 4113

VE 4/8 F 2450 L 212
0 460 484 011

Overflow temperature 45° C

supersedes
company: VW
engine: 1,3 l

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,5-4,9	mm		
1.2 Supply-pump pressure	1500	5,4-6,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	24,5-25,5	cm³/1000 strokes		max. 2,0
1.4 Idle regulation	A 800	2,0-3,0	cm³/1000 strokes		
1.5 Full-speed regulation	2600	11,0-17,0	cm³/1000 strokes		
1.6 Start	100	min. 32,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2000	2450
	mm	2,2-3,0(1,9-3,3)	(4,0-5,4)	6,9-7,7(6,6-8,0)	8,6-9,4(8,3-9,7)
2.2 Supply pump	n = rev/min	600		2450	
	bar (kgf/cm²)	3,3-3,9		7,7-8,3	
Overflow delivery	n = rev/min	600		2450	
	cm³/10 s	41-86(26-98)		55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2850	max. 4,0		
	2650	4,0-14,0	(5,0-13,0)	
	2600		(10,0-18,0)	
	2450	20,0-22,0	(18,7-23,3)	
	1500		(22,7-27,3)	
	600	15,5-18,5	(14,0-20,0)	
switch-off				
electr.	70-400	0		
Idle stop	A 550	max. 5,4		
	B 400	11,0-13,0	(8,0-16,0)	
	B 450	5,5-8,5	(3,0-11,0)	
End stop	150	min. 25,0		
	300	max. 28,0		

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5.7-6,0
MS	1,3-1,5
SVS	4,9
A	
B	

Observations

J16

J16

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Vol 3,1c
1. Edition
En

Testoil-ISO 4113

VE 4/11 F 190[illegible] L 217 Overflow temperature 45° C
0 460 414 027
DHK 1 688 901 022
Fuel injection test tubing 1 680 750 073

supersedes
company: Volvo
engine: TAMD 31 95 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,3-4,7	mm	1,0	
1.2 Supply-pump pressure	1500	6,1-6,7	bar (kgf/cm²)	1,0	
1.3 Full-load delivery with charge-air pressure	1500	93,5-94,5	cm³/1000 strokes	1,0	max. 5,0
Full-load delivery without charge-air pressure	650	58,0-59,0	cm³/1000 strokes	0	
1.4 Idle regulation	350	23,0-27,0	cm³/1000 strokes	0	max. 3,5
1.5 Full-speed regulation	2100	31,0-37,0	cm³/1000 strokes	1,0	
1.6 Start	100	min. 100,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 1,0 bar	n = rev/min	1100	1500	1900
	mm	0,9-1,7(0,6-2,0)	(3,8-5,2)	6,1-6,9(5,8-7,2)
2.2 Supply pump LDA = 1,0 bar	n = rev/min	500		1900
	bar (kgf/cm²)	2,4-3,0		7,5-8,1
Overflow delivery	n = rev/min	700 (0 bar)		1900 (1,0 bar)
	cm³/10 s	41-86 (26-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2230	max. 3,0		1,0
	2100		(29,5-38,5)	1,0
	2050	62,0-71,0	(62,0-71,0)	1,0
	1900	83,0-86,0	(81,8-87,2)	1,0
	1500		(91,3-96,7)	1,0
	1200	96,2-98,8	(94,1-100,9)	1,0
	700	95,0-98,0	(93,1-99,9)	1,0
	800 *	83,5-84,5	(80,6-87,4)	0,3
	650		(55,1-61,9)	0
switch-off				
Idle stop	350		(20,5-29,5)	
	400	7,0-13,0	(5,5-14,5)	
	480	max. 3,0		
End stop	400	min. 74,0		
	500	max. 72,0		

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,2-5,5
MS	1,2-1,4
SVS	3,8
A	
B	

Observations

* LDA-stroke 6,4 mm
Use adjusting nut (46) to correct.

J17

J17

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Vol 3,1b
1. Edition
En

Testoil-ISO 4113

VE 4/11 F 1900 L 217-1 Overflow temperature 45° C
0 460 414 028
DHK 1 688 901 022
Fuel injection test tubing 1 680 750 073

superseded
company: Volvo
engine: TAMD 31 95 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,3-4,7	mm	1,0	
1.2 Supply-pump pressure	1500	6,1-6,7	bar (kgf/cm²)	1,0	
1.3 Full-load delivery with charge-air pressure	1500	93,5-94,5	cm³/1000 strokes	1,0	max. 5,0
Full-load delivery without charge-air pressure	650	58,0-59,0	cm³/1000 strokes	0	
1.4 Idle regulation	350	23,0-27,0	cm³/1000 strokes	0	max. 3,5
1.5 Full-speed regulation	2100	31,0-37,0	cm³/1000 strokes	1,0	
1.6 Start	100	min. 100,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 1,0 bar	n = rev/min	1100	1500 1900
	mm	0,9-1,7(0,6-2,0)	(3,8-5,2) 6,1-6,9(5,8-7,2)
2.2 Supply pump LDA = 1,0 bar	n = rev/min	500	1900
	bar (kgf/cm²)	2,4-3,0	7,5-8,1
Overflow delivery	n = rev/min	700 (0 bar)	1900 (1,0 bar)
	cm³/10 s	41-86(26-98)	55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2230	max. 3,0		1,0
	2100		(29,5-38,5)	1,0
	2050	62,0-71,0	(62,0-71,0)	1,0
	1900	83,0-86,0	(81,8-87,2)	1,0
	1500		(91,3-96,7)	1,0
	1200	96,2-98,8	(94,1-100,9)	1,0
	700	95,0-98,0	(93,1-99,9)	1,0
	800 *	83,5-84,5	(80,6-87,4)	0,3
	650		(55,1-61,9)	0
switch-off				
Idle stop	350		(20,5-29,5)	
	400	7,0-13,0	(5,5-14,5)	
	450	max. 3,0		
End stop	400	min. 74,0		
	500	max. 72,0		

2.4 Solenoid ___ cut-in voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,5
MS	1,2-1,4
SVS	3,8
A	
B	

Observations
pushing electronagnet 24 V

* LDA-stroke 6,4 mm

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

J11

⑥ Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 Vol 3,1a

1. Edition

En

Testoil-ISO 4113

VE 4/11 F 1900 L 217-3 Overflow temperature 45° C
0 460 414 032
DHK 1 688 901 022
Fuel injection test tubing 1 680 750 073

supersedes –
company: Volvo
engine: TMD 31 74 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,3-5,7	mm	0,8	
1.2 Supply-pump pressure	1500	5,8-6,4	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	70,0-71,0	cm³/1000 strokes	0,8	
Full-load delivery without charge-air pressure	700	53,0-54,0	cm³/1000 strokes	0	
1.4 Idle regulation	350	18,0-22,0	cm³/1000 strokes	0	
1.5 Full-speed regulation	2150	12,0-18,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 90	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,8 bar	n = rev/min	1000	1500	1900
	mm	1,5-2,3(1,2-2,6)	(4,8-6,2)	6,3-7,1(6,0-7,4)
2.2 Supply pump LDA = 0,8 bar	n = rev/min	500		1900
	bar (kgf/cm²)	2,2-2,8		7,2-7,8
Overflow delivery	n = rev/min	700 (0 bar)		1900 (0,8 bar)
	cm³/10 s	41-86(26-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2220	max. 3,0		0,8
	2150		(10,5-19,5)	0,8
	2100	37,0-45,0	(36,5-45,5)	0,8
	1900	68,5-71,5	(67,7-72,7)	0,8
	1500		(67,8-73,2)	0,8
	700	66,5-69,5	(64,6-71,4)	0,8
	700 *	60,5-61,5	(57,6-64,4)	0,3
	700		(49,9-56,7)	0
switch-off				
Idle stop	350		(15,5-24,5)	
	400	4,5-10,5	(3,0-12,0)	
	450	max. 3,0		
End stop	400	min. 70,0		
	500	max. 65,0		

2.4 Solenoid — cut-in voltage min. 10 V
rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	–
KF	5,2-5,5
MS	1,2-1,4
SVS	3,8
A	
B	

Observations

* LDA-stroke 6,3 mm
Use adjusting nut (46) to correct.

J19

J19

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VOL 4,1 a
1. Edition
En

Testoil-ISO 4113

VE 6/11 F 1900 L 218-2 Overflow temperature 45° C
0 460 416 049
DHK 1 688 901 022//130 bar
Fuel injection test tubing 6x2x450 mm

supersedes company: Volvo-Penta engine: TMD 41 110kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ±0,02(0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1200	3,6-4,0	mm	0,8	
1.2 Supply-pump pressure	1200	6,2-6,8	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	71,0-72,0	cm³/1000 strokes	0,8	3,5(4,0)
Full-load delivery without charge-air pressure	700	56,0-57,0	cm³/1000 strokes	0	
1.4 Idle regulation	350	18,0-22,0	cm³/1000 strokes	0	3,5(4,0)
1.5 Full-speed regulation	2050	17,0-23,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 85,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,8 bar	n = rev/min	700	1200	1600
	mm	0,5-1,3(0,2-1,6)	(3,1-4,5)	4,7-5,5(4,4-5,8)
2.2 Supply pump LDA = 0,8 bar	n = rev/min	500		1900
	bar (kgf/cm²)	3,5-4,1		8,6-9,2
Overflow delivery	n = rev/min	700 (0 bar)		1900 (0,8 bar)
	cm³/10 s	41-83(26-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2130	max. 3,0		0,8
	2050		(15,5-24,5)	0,8
	2000	39,5-46,5	(40,4-45,6)	0,8
	1900	69,0-72,0	(67,9-73,1)	0,8
	1500		(68,9-74,1)	0,8
	700	71,0-74,0	(69,1-75,9)	0,8
	700 *	61,0-62,0	(58,9-64,1)	0,3
	700		(53,9-59,1)	0
switch-off				
Idle stop	400		(15,5-24,5)	
	450	max. 3,0		
End stop	300	min. 85,0		
	500	max. 70,0		

2.4 Solenoid — cut-in voltage: min. 10 Volt, rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,5
MS	1,2-1,4
SVS	3,8
A	
B	

Observations

* LDA-stroke 5,5 mm
Use adjusting nut (46) to correct.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VOL 4,1b
1. Edition
En

Testoil-ISO 4113

VE 6/11 F 1800 L 218-3 Overflow temperature 45° C

supersedes
company: Volvo
engine: TD 41-91 kW

0 460 416 053
DHK 1 688 901 022
Fuel injection test tubing 1 688 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1200	4,8- 5,2	mm	1,0	
1.2 Supply-pump pressure	1200	6,3- 6,9	bar (kgf/cm²)	1,0	
1.3 Full-load delivery with charge-air pressure	1000	76,5-77,5	cm³/1000 strokes	1,0	max. 3,5
Full-load delivery without charge-air pressure	750	43,5-44,5	cm³/1000 strokes	0	
1.4 Idle regulation	400	12,0-16,0	cm³/1000 strokes	0	max. 3,5
1.5 Full-speed regulation	2000	15,0-21,0	cm³/1000 strokes	1,0	
1.6 Start	100	min. 90,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=1,0 bar	n = rev/min	700	1200	1500	1800
	mm	0,6-1,4(0,3-1,7)	(4,3-5,7)	6,2-6,8(5,8-7,2)	6,2-7,0(5,9-7,3)
2.2 Supply pump LDA=1,0 bar	n = rev/min	700	1500	1800	
	bar (kgf/cm²)	5,0-5,6	7,0-7,6	7,7-8,3	
Overflow delivery	n = rev/min	700 (0bar)		1800 (1,0 bar)	
	cm³/10 s	41-86(26-98)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2050	max. 6,0		1,0
	2000		(13,5-22,5)	1,0
	1950	37,0-45,0	(36,5-45,5)	1,0
	1800	72,0-76,0	(71,3-76,7)	1,0
	1500	74,0-78,0	(73,3-78,7)	1,0
	1000		(74,3-79,7)	1,0
	750	69,5-72,5	(68,3-73,7)	1,0
	750 *	59,5-60,5	(57,3-62,7)	0,3
	750		(41,3-46,7)	0
switch-off				
Idle stop	400		(9,5-18,5)	
	450	3,0-[illegible],0	(1,5-10,5)	
	500	max.3,0		
End stop	400	min.45,0		
	450	max.50,0		

2.4 Solenoid — cut-in voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,5
MS	0,9-1,1
SVS	5,5
A	
B	

Observations

* LDA-stroke 6,2 mm
Use adjusting nut (46) to correct.

24 V Pulling electromagnet

J21

Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 VMA 1,5a
1. Edition

Testoil-ISO 4113

VE 3/10 F 2100 L 227 Overflow temperature 45° C
0 460 403 008

supersedes
company: Motori VM
engine: HR 392 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,4 mm ± 0,02(0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,5- 4,9	mm	0,8	
1.2 Supply-pump pressure	1500	4,9- 5,5	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	57,0-58,0	cm³/1000 strokes	0,8	max. 3,0
Full-load delivery without charge-air pressure	500	43,5-45,5	cm³/1000 strokes	0	
1.4 Idle regulation	425	9,5-13,5	cm³/1000 strokes	0	max. 3,0
1.5 Full-speed regulation	2330	22,0-29,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 40	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1500	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min	1000	1500	1900	2100
	mm	0,8-1,6(0,5-1,9)	(4,0-5,4)	6,9-7,7(6,6-8,0)	6,9-7,7(6,6-8,0)
2.2 Supply pump LDA=0,8 bar	n = rev/min	600		2100	
	bar (kgf/cm²)	1,7-2,3		7,0-7,6	
Overflow delivery LDA=0,8 bar	n = rev/min	500		2100	
	cm³/10 s	41-86(26-98)		55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2450	max. 2,5		0,8
	2330		(21,0-30,0)	0,8
	2250	32,3-38,3	(30,8-39,8)	0,8
	2100	49,3-51,7	(47,8-53,2)	0,8
	1500		(54,8-60,2)	0,8
	750 *	52,0-53,0	(49,1-55,9)	0,3
	750	55,0-58,0	(53,1-59,9)	0,8
	750	48,0-49,0	(45,1-51,9)	0
	500		(41,1-47,9)	0
switch-off				
Idle stop	425		(7,0-16,0)	
	600	2,3- 8,3	(0,8- 9,8)	
	1200	max. 2,5		
End stop	350	min. 45,0		

2.4 Solenoid — cut-in voltage: min. 10 V
rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,7-6,0
MS	0,7-0,9
SVS	6,0
A	
B	

Observations

* LDA-stroke 7,5 mm
Use adjusting nut (46) to correct.

J22

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 1 g 13

3. Edition

En

PES 3 A 80 D 410/3 RS 1324 RSV 325-1250 A 8 C 2168-1 L supersedes 5.85

Komb.-Nr. 0 400 453 148

company KHD

engine F 3 L 912

45 kW/2500 min^{-1}

tractor DX 3,30

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test to ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,7+0,1	5,6-5,7	0,25(0,35			
325	8,3-8,5	1,0-1,6	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 19	325	7,9	1250	10,7-10,8
	x =	4,0							500	11,2-11,3
							100	min.19,5	800	11,2-11,4
ca. 57	9,7	1290-1300					325	8,3-8,5	1090	10,8-11,1
(2a)	4,0	1330-1360					450-510	= 2,0		
	1565	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limit: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1250	55,5-56,5 (54,0-58,0)	1290-1300*	800	48,5-50,5 (46,5-52,5)	100	115,0-125,0 (112,0-128,0) =19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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J23

J23

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 TAM 12,7 a

2. Edition

En

PE 8 A 95 D 410 LS 2451 RQV 300-1150 AB 1045-1 L

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je 45° ± 0,5° (± 0,75°)

Komb.-Nr. 0 400 648 143

supersedes 1.86

company: TAM

engine: F 8 L 413 F
173 kW/2300 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,3-9,4	8,6-8,8	0,3(0,6)			
300	5,9-6,1	1,4-2,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm : rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 16	100 300	min.7,5 5,9-6,1	200 600 850 1200	0,7-0,9 3,9-4,1 6,9-7,1 8,4
ca. 46	8,3 4,0 1350	1190-1200 1225-1255 0-1,0				330-445 (3a)				

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	86,0-88,0 (84,0-90,0)	1190-1200*	1000	86,5-89,5 (84,5-91,5)	100	116,5-126,5 (113,5-129,5)	1150 500 765 820	9,3+0,1 9,7+0,1 9,5+0,2 9,4+0,2
			700	86,5-89,5 (84,5-91,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

J24

Test Specifications Fuel Injection Pumps ① and Governors

En

PES 5 A 95 D 320 LS 2504 RQV 250-1100 AB 978 DR

Komb.-Nr. 0 400 845 037

1-3-5-4-2 je 72 ° ± 0,5 ° (± 0,75 °)

supersedes-
company: MAN
engine: D 2565 MUL
141 kW/2200 min^{-1}

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	11,4-11,6	0,3 (0,6)			
250	6,4-6,6	1,5-2,1	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	14,4-17,6	-	-	-	ca. 13	100	min.7,2	200	0,7-0,9
							250	5,6-5,8	500	3,4-3,7
ca. 42	10,3	1140-1150					315-375	= 2,0	800	4,8-5,2
	4,0	1175-1205					450	max. 1,0	1100	7,3
	1300	0 - 1,0				(3a)				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1100	114,0-116,0 (112,0-118,0)	1140-1150 *	800	111,0-115,0 (109,0-117,0)	100	13,7-14,3 mm RW	1100	11,3+0,1
							800	11,5+0,2
			500	108,5-112,5 (106,5-114,5)	250	15,0-21,0 = 6,5 mm	500	11,8+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

K1

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 4,1 c 4

En 2. Edition

PES 4 A 80 D 410/3 RS 2523 RSV 325-1400 A 8 C 1022 L

Komb.-Nr. 0 400 864 046

supersedes 1.85
company KHD
engine F 4 L 912

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,2+0,1	5,7-5,8	0,2 (0,35)			
325	8,0-8,2	0,9-1,5	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 23	325	7,6	1400	10,2-10,3
	x =	3,5							900	10,8-11,1
							100	min.19,5	500	11,4-11,5
ca. 69	9,2	1440-1450					325	8,0-8,2		
(2a)	4,0	1470-1500					670-730	= 2,0		
	1600	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop* Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1400	57,0-58,0 (55,5-59,5)	1440-1450*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

K2

K2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 m
8. Edition
En

Testoil-ISO 4113

PE 6 A 85 D 320 RS 2546 RSV 250-750 A 7 B 2125 R

supersedes 12.84
company: DAF
engine: DD 575 DF

Komb.-Nr. 0 400 676 168
Values apply to fuel-injection test tubing
1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC) ; RW = 9,0

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,1+0,1	6,2 - 6,4	0,3(0,45)			
250	8,4-8,6	0,9 - 1,5	0,25(0,45)			

Port closing difference between control-rod travel 9 mm and max. 3 - 4° camshaft

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 15	250	8,5	-	-
	x =	4,5					250	8,4-8,6		
							260-320	=2,0 **		
ca.40 (5)	11,1 4,0 955	770-780 8,5-805 0,3-1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel,

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
750	61,5 - 63,5 (59,5 - 65,5)	770-780*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

K3

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

K3

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 i 1
5. Edition
En

PE 6 A 90 D 320 RS 2547 RSV 250-1200 A5B 779 R

supersedes: 12.84
company: DAF
engine: DT 615

Komb.-Nr. 0 400 676 141
0 400 676 153

Values apply to fuel-injection test tubing
1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC) ; RW = 9,0 Difference between CRT9 + 21 2,5-3,5°

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	10,8+0,1	7,1 - 7,2	0,3(0,45)			
250	5,9-6,1	0,9 - 1,3	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 15	250	5,5	1000	10,8+0,1
	x	= 3,25							300	11,2+0,5
							250	5,9-6,1	400	11,0+0,2
(5) ca. 51	9,8	1240-1250					330-390=2.0			
	4,0	1280-1310								
	1450	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
LDA 1000	0,7 bar 71,0-72,0 (69,0-74,0)	1240-1250*	LDA 600	0 bar 51,5 - 53,5 (49,5 - 55,5)	100	133,0-143,0 = 19,5 - 21,0 mm RW	0 -	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

K4

154

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1000 rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
.. RS 2547 + RSV .. A5B 779 R	0,7 bar		10,8 - 10,9
		0,25	10,6 - 10,7
		0,21	10,1 - 10,4
		0	9,8 - 10,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K5

En K5

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 6,2 n
6. Edition
En

PE 6 A 90 D 320 RS 2577 RSV 250-750 A 7 B 2125 R

supersedes 10.84
company DAF
engine DT 615

Komb.-Nr. 0 400 676 167
Values apply to fuel-injection test tubing 1 680 750 015
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

RW = 9,0 mm

Port closing at prestroke (2,15-2,35) 2,20-2,30 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,0+0,1	7,5 - 7,7	0,4 (0,55)			
250	5,9-6,1	0,8 - 1,4	0,2(0,4)			

Port closing difference between control-rod travel 9 mm and max. 2,5-3,5° camshaft

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.15	250	6,0	-	-
	X =	5,0			100	min.19,5		
ca.40 (2a)	10,0	770-780			250	5,9-6,1		
	4,0	785-805			260-320	= 2,0 **		
	955	0.3-1.7						

** Set idle-speed auxiliary spring at 2 mm control-rod travel,

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	75,0-77,0 (73,0-79,0)	760-770*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

K6

K6

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 15,0 d 1
2. Edition
En

PE 10 A 95 D 520/5 LS 2604 RQV 250-1150 AB 1189 R

supersedes 9.83
company: MAN
engine: D 2840 ME

Komb.-Nr. 0 400 649 240
1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4
0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8 (1,65-1,85) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	13,0+0,1	12,8-13,0	0,35(0,6)			
250	6,9-7,1	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 12	250	6,9-7,1	350	2,0-2,5
									850	5,8-6,0
ca. 62	12,0	1190-1200					400-	460=2,0	1150	7,5-7,9
	4,0	1280-1310							1300	9,6
	1400	0 - 1,0								
						(3a)				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1150	128,0-130,0 (122,5-128,5)	1190-1200*	-	-	100	15,9-16,5 mm RW	1150	13,0+0,1
							500	13,5+0,1
							1010	13,4+0,2
							1080	13,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

K7

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 9,6 i 1
4. Edition
En

PE 6 A 95 D 410 LS 2621 RQV 300-1250 AB 1195 L
Komb.-Nr. 0 400 646 271

1- 6- 5 - 4 - 3 - 2
0-75-120-195-240-315° ± 0,5° (± 0,75 °)

supersedes 9.85
company: KHD
engine: F 6 L 413 F
141 kW / 2500 min^{-1}

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,4+0,1	9,2 - 9,4	0,35(0,6)			
300	6,4-6,6	0,8 - 1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1375	15,2-17,8	-	-	-	ca. 18	100	min.8,0	300	1,2-1,3
							300	6,5-6,7	500	2,6-2,9
ca. 51	9,4	1290-1300							1000	5,4-5,6
	4,5	1365-1395							1300	7,7-7,8
	1500	0 - 1,0				375-485 (3a)			1380	8,7

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1250	91,5 - 93,5 (89,5 - 95,5)	1290-1300 *	750	93,0-96,0 (90,5-98,5)	100	116,5-126,5 (113,5-129,5)	1250	10,4+0,1
							500	10,9+0,1
							850	10,7+0,2
							950	10,5+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

K8

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 LIE 5,6 a

3. Edition

En

PES 4 A 95 D 410 RS 2685 RSV 400-1000 A 1 C 2187 L

supersedes 10.85

company Liebherr

engine D 904 NA 70 kW

Komb.-Nr. 0 400 874 238

Values apply to fuel-injection test tubing 1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,7-9,8	7,9-8,1	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 23	400	5,7	1000	9,7-9,8
	x = 2,5						100	min.19,5	550	9,7-9,9
							400	6,1-6,3	430	10,9-11,5
ca. 50	8,7	1040-1050					455-515	=2,0		
(2a)	4,0	1065-1095								
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min* 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	79,0-81,0 (77,0-83,0)	1040-1050*	600	69,0-72,0 (66,5-74,5)	100	120,0-130,0 (117,0-133,0) = 19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

K9

K9

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 LIE 5,6 b

3. Edition

En

PES 4 A 100 D 410 RS 2686 RQV 400-1000 AB 1203 L

supersedes 10.85

company: Liebherr

engine: D 904 T

Komb.-Nr. 0 400 844 085

Values apply to fuel-injection test tubing, 1 680 750 008

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,9-12,1	0,35(0,6			
400	5,9-6,1	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca. 11	100 400	min.7,5 5,9-6,1	375 600 1000 1150	1,0-1,1 3,7-4,0 7,5-7,6 9,9
ca. 62	10,4 4,0 1250	1040-1050 1105-1135 0 - 1,0				420-530 (3a)				

Torque control travel a = 1,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 119,0-121,0 (117,0-123,0)	1040-1050*	LDA 700	0,7 bar 128,5-131,5 (126,0-134,0)	100	19,5-21,0 mm RW	1000 500 900 700	11,4+0,1 12,8+0,1 11,7+0,2 12,5+0,2
			LDA 500	0 bar 87,5-90,5 (85,5-92,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference * mm (1)
PES 4 A .. RS 2686 +RQV .. AB 1203 L	0,70	0 0,40 0,33	12,8-12,9 10,4-10,5 11,8-11,9 10,6-10,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K11

En KAA

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 LIE 8,4 b
2. Edition
En

PES 6 A 100 D 410 RS 2687 RQV 400-1000 AB 1203 L
Komb.-Nr. 0 400 846 536
Values apply to fuel-injection test tubing
1 680 750 008

supersedes 9.85
company: Liebherr
engine: D 906 T

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	10,5-10,7	0,35(0,6)			
400	6,3-6,5	1,0-1,6	0,35(0,55)			
Port closing difference between control-rod travel 12,0 mm and max. 4-5° camshaft						

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca. 14	100	min.7,9	375	1,0-1,1
							400	6,3-6,5	600	3,7-4,0
ca. 62	10,3	1040-1050							1000	7,5-7,6
	4,0	1105-1135							1150	9,9
	1250	0-1,0				420-530 (3a)				

Torque control travel a = 1,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1040-1050*	LDA	0,7 bar	100	105,0-115,0	1000	11,4+0,1
1000	105,0-107,0		700	118,5-121,5		(102,0-118,0)	500	12,8+0,1
	(103,0-109,0)			(116,0-124,0)		=19,5-21,0 mm RW	900	11,8+0,2
			LDA	0 bar				
			500	87,5-90,5				
				(85,5-92,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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K12

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 A..RS 2687 +RQV..AB 1203 L	0,70	 0 0,40 0,37	12,8-12,9 11,3-11,4 12,4-12,5 11,6-11,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 LIE 8,4 a

3. Edition

En

PES 6 A 95 D 410 RS 2689 RSV 400-1000 A 1 C 2187 L
Komb.-Nr. 0 400 876 322

supersedes 10.85
company Liebherr
engine D 906 NA
150 kW

Values apply to fuel-injection test tubing 1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,7-9,8	8,1-8,3	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca.23	400	5,7	1000	9,7-9,8
	x =	2,5					100	min.19,5	550	9,7-9,9
							400	6,1-6,3	430	10,9-11,5
ca. 50 (2a)	8,7	1040-1050					455-515	= 2,0		
	4,0	1065-1095								
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	81,0-83,0 (79,0-85,0)	1040-1050*	600	70,0-73,0 (67,5-75,5)	100	120,0-130 (117,0-133	0 - 0)	-
					400	10,0-16,0 (7,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

K14

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 6,2 o 1

2. Edition

En

PES 6 A 95 D 320 RS 2693 Z RSV 300-1300 AOC 2195 R supersedes 10.85
Komb.-Nr. 0 400 876 333 company DAF
engine: DNT 620

Values apply to fuel-injection test tubing 1 680 750 015

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC) ; RW = 7,5 - 10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,2+0,1	8,7-8,9	0,35 (0,6)			
300	6,1-6,3	0,6-1,2	0,35(0,55)			

Port closing difference between control-rod travel 9 mm and max.2,5 - 3,5 ° camshaft

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7				ca. 27	300	5,7	1290	11,6-11,8
	x = 5,5								500	12,2-12,3
							100	min.19,5	1020	11,9-12,1
ca. 58	10,6	1340-1350					300	6,1-6,3		
(2a)	4,0	1430-1460					570-630	=2,0		
	1595	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5), Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 87,0-89,0 (85,0-91,0)		LDA 1290	0,7 bar 85,0-87,0 (82,5-89,5)	100	125,0-135,0 (122,0-138,0)	-	-
			LDA 600	0 bar 65,0-67,0 (63,0-69,0)	300	6,0-12,0 (3,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

K15

KA5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference * mm (1)
PES 6 A..RS 2693 Z + AOC 2195 R	0,70	0 0,29 0,25	12,2-12,3 11,2-11,4 12,0-12,1 11,5-11,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 RVI 8,2 a

2. Edition

En

PE 8 AM 90 D 321 RS 2014 RQV 275-1500 AB 837 R

Komb.-Nr. 0 405 058 201

1-8-7-3-6-5-4-2 je 45 ° ± 0,5 ° (± 0,75 °)

supersedes 6.85
company: RVI
engine: HS 115
191 KW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC) Port closing mark cyl.7

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,2+0,1	8,7-8,8	0,3(0,45)			
275	6,6-6,8	1,6-2,0	0,45(0,65)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1650	15,2-17,8	-	-	-	ca. 12	100 275	min. 8,2 6,6-6,8	275 415 800 1100 1490	0,5-0,7 2,0-2,2 3,9-4,1 5,5-5,7 8,6
ca. 66	9,2 4,0	1595-1605 1660-1690				325-390 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	87,0-88,0 (85,0-90,0)	1595-1605 *	-	-	100	158,0-168,0 (155,0-171,0 = 17,5-17,9 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

K17

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 6,0 j
5. Edition
En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004
RQV 300...1150 MW 8/2 R

1- 5- 3 - 6 - 2 - 4
0-60-120-180-240-300 ± 0,5° (0,75°)

supersedes 4.85
company: Volvo
engine: TD 60

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,5+0,1	9,4-9,6	0,35(0,6)			
300	5,2-5,4	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150 1400	15,2-17,8 0-1,0	-	-	-	ca. 11 (3a)	100 300 370-430	min.7,0 5,2-5,4 =2,0	300 800 1190	1,1-1,2 4,3-4,6 9,2
ca. 50	10,5 4,0	1190-1200 1235-1265								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	94,0-96,0 (92,0-98,0)	1190-1200*			100 300	20-21 mm RW 120,0-130,0 (117,0-133,0) 9,5-13,5 (7,0-16,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

K18

K19

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 RVI 8,8 k 2

9. Edition

En

Tesi-ISO 413

PES 6 MW 100/320 RS 1016
RQV 300 - 1400 MW 25-1
Komb. 0 403 446 122
1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 12.85
company: RVI
engine: MIDR 06.02-12
125 kW (170 PS)

*Start-of-delivery mark 8° after start of delivery with control-rod travel 10.5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	9,1-9,3	0,35(0,6)			
300	6,2-6,3	0,95-1,35	0,35(0,55)			
900	11,1+0,1		0,5(0,7)			
500	9,8-9,9					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1400 1650	15,2-17,8 0-1,0				ca.12	200 300	max.7,5 5,8-5,9		
ca.62	10,1 4,0	1455-1465 1575-1605				(3a)	490-550 = 2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1400	0,5 bar 91,5-93,5 (89,5-95,5)	1455-1465*	LDA 900 LDA 500	0,5 bar 87,5-91,5 (85,5-93,5) 0 bar 59,0-61,0 (57,0-63,0)	100 300	91,5-93,5 (89,5-95,5) 9,5-13,5 (7,0-16,0) 100-230(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

K19

K19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1016 mit MW 25-1	0,23	0,5 0,2 0	10,7-10,9 11,1-11,2 10,2-10,3 9,7-9,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K20

K20 En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 f
5. Edition
En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1016 RQV 300-1400 MW 25-2
0 403 446 129

1- 5- 3 - 6 - 2 - 4
0-60-120-180-240-300

supersedes 10.84
company: RVI
engine: MIDR 06.02-12
125 kW (170 PS)

*Start-of-delivery mark 8° after start of delivery with control-rod travel 10.5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	9,1-9,3	0,35(0,6)			
300	5,8-5,9	0,95-1,35	0,35(0,55)			
900	11,1+0,1		0,5 (0,7)			
500	9,4+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1400 1700	15,2-17,8 0- 1,0	-	-	-	ca. 13	300 200	5,8-5,9 max.7,5	200 300	0,8 1,4
ca. 62	10,1 4,0	1455-1465 1575-1605				(3a)	490-550 = 2,0		600 1000 1200 1400	4,1 5,7 6,8 8,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 91,0-93,0 (89,0-95,0)	1455-1465*	LDA 900	0,7 bar 86,0-90,0 (84,0-92,0)	100	94,0-104,0 (91,0-107,0)		
			LDA 500	0 bar 52,0-54,0 50,0-56,0	300 100-230	9,5-13,5 (7,0-16,0) (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

K21

K21

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1016 mit RQV...MW 25-2	0,12	0,16 0 0,7	9,9-10,0 10,7-10,8 9,4- 9,5 11,1-11,2

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119
RQV 300-1400 MW 57
0 403 446 152

supersedes 10.85
company: Volvo
engine: TD 61.3012
132 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) 9-12 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,6+0,1	9,0-9,2	0,35(0,6)			
300	6,9-7,0	1,6-2,0	0,35(0,5)			
1000	10,3+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1480 1725	15,2-17,8 0-1,0				ca. 16	300 100	6,9-7,0 min.8,5		
ca. 62	10,6 4,0	1440-1450 1595-1625				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 90,0-92,0 (88,0-94,0)	1440-1450*	LDA 1000	0 bar 75,0-77,0 (73,0-79,0)	100 300	140-160 (137-163) 16,0-20,0 (13,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1119 with MW 57	0,20		10,5-10,6
		0,30	11,2-11,5
		0,70	11,6-11,7
		0	10,3-10,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 VOL 6,1 g
2. Edition
En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119-1
RQV 300-1400 MW 57-1
0 403 446 153

supersedes 10.85
company Volvo
engine: TD 61.3012
150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) 9,0-12,0 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0,1	10,4-10,6	0,35(0,6)			
300	6,3-6,4	1,6-2,0	0,35(0,55)			
1000	10,1+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1480 1700	15,2-17,8 0-1,0				ca. 13 (3a)	300 100	6,3-6,4 min.7,9		
ca. 61	11,0 4,0	1440-1450 1590-1620								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 104,0-106,0 (103,0-109,0)	1440-1450*	LDA 1000	0 bar 75,0-77,0 (73,0-79,0)	100 300	140,0-160,0 (137,0-163,0) 16,0-20,0 (13,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

L1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1119-1 with RQV..MW 57-1	0,28	0,15 0 0,7	11,5-11,8 10,5-10,6 10,1-10,2 12,0-12,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7a17

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/720 RS 1125
RSV 300-1300 MWO A 317

0 403 476 028

supersedes: –
company: Daimler-Benz
engine: OM 362 LA
141 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Values apply to fuel-injection test tubing 1 680 750 008

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1280	11,8+0,1	9,2-9,4	0,35(0,6)			
300	5,9-6,0	1,2-1,6	0,35(0,5)			
800	11,8+0,1		0,5(0,7)			
500	9,7-9,8					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca. 16	300	5,9-6,0		
					100	min.19,0		
ca.59 (2a)	1330-1340 = 10,8 1400-1430 = 4,0 1560 = 0,3-1,7							

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel,

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,9 bar		LDA	0,9 bar	100	80,0-90,0		
1280	92,0-94,0		800	92,0-94,0		(77,0-93,0)		
	(90,0-96,0)			(89,0-97,0)	300	12,0-16,0		
			LDA	0 bar		(11,0-17,0)		
			500	50,0-52,0				
				(48,0-54,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Note: Test elec. unlocked starting fuel delivery (EES) with 24 Volts. 12.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

L3

L3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 1125 mit RSV..A 317	0,45	0 0,35 0,90	11,4-11,6 9,7-9,8 10,5-10,7 11,8-11,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 10,8 t
5. Edition
En

PE 6 P 100/720 RS 15 — RQ 250/1100 PA 66D (1)
RQ 250/1100 PA 50 D (2)
(A) — EP/RSV250-900P1/303 (3-4)
RS 15 Z — EP/RSV300-1100P1/303 (5)

supersedes 5.72
company: Daimler-Benz
engine: OM 346
(192 PS - 1)
(230 PS - 2)
(165 PS - 3)
(175 PS - 4)
(OM 346/355 - 5*)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke — mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12	9,3 - 10,3	0,4			
1000	6	2,6 - 3,4				
	9	5,9 - 6,7				
200	9	2,5 - 3,3				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQ.. PA 66D (1)

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
1050	14,4-15	1050	14,7	1100	14,4-14,7	570	0	200	6,6-7,2	450	15,9-16,6
				1150	10,0-13,5			300	4,5-5,5		
				1200	3,0- 5,0			400	0,8-2,5	700	15,3-15,6
				1260	0			470	0	940	14,7-14,8

Torque-control travel on flyweight assembly dimension a = 0,4 mm — Speed regulation: At — 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1090	93,5 - 95,0	500	900	91,5 - 94,0	100	14 - 17
			600	96,5 - 99,0		
			450	89,5 - 92,5		
When checking (column 2 and 5) increase by ± 0.4 cm³/100h						

Checking values in brackets

L5

L5

B. Governor Settings

RQ .. 250/1100 PA 50D (2)

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
1050	14,7-15,3	1050	15,0	1100	14,9-15,0	560	0	150	7,0-8,0	700	15,9-16,0
				1120	14,3-15,0			200	6,6-7,6		
				1150	9,8-13,3			300	4,5-5,5	950	15,0-15,3
				1200	3,0- 5,0			400	0,7-2,5		
				1260	0			460	0		

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation. At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
Pump .. S15 with governor RQ..PA 50 D (2)						
1090	123,5 - 126,5		900	125,0 - 129,0	100	18 - 20,5
			700	122,5 - 126,5		
			450	116,5 - 121,5		

Checking values in brackets

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation. At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp. 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

L6

B. Governor Settings

EP/RSV .. 250-900 P1/303 (3-4)

(1) Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	(4) Lower rated speed: Control-lever deflection in degrees (7)	rev/min (8)	Control rod travel mm (9)	(3) Torque control: rev/min (10)	Control rod travel mm (11)
ca. 46	900	16,0	without auxiliary spring	ca. 21	250	6,0	880	0
	950	9,5			100	19 - 21		
	980	4,5			250	5,7-6,3	450	0
	950	8,2-10,8			350	1,7-3,8		
(2a)	1000	2,0- 4,0	with auxiliary spring		460	0-1	300	1,2 - 1,8
	1080	0-1						

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	(6) Rotational-speed limitat. Note: changed to ...) rev/min (3)	(3a) Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery idle (5): rev/min (6)	cm³/1000 strokes (7)	(4a) Idle stop: rev/min (8)	Control rod travel mm (9)
Pump .. S15 with governor 250-900 P1/303 (3 - Continuous output 165 bhp)								
880	93,0 - 96,0	910 (EP/RSV)		(4 - Special output 175 bhp)				
880	99,0 - 102,0	910 (EP/RSV)						

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

EP/RSV .. 300-1100 P1/303 (5)

(1) Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	(4) Lower rated speed: Control-lever deflection in degrees (7)	rev/min (8)	Control rod travel mm (9)	(3) Torque control: rev/min (10)	Control rod travel mm (11)
ca.58	1100	16,0	without auxiliary spring	ca.23	300	7,5	1080	0
	1140	12,0			200	19 - 21		
	1180	7,0			300	7,2-7,8	500	0
	1150	10,0-12,0			400	3,3-4,2		
(2a)	1200	3,8- 4,2	with auxiliary spring		550	0-1	350	1,2-1,8
	1340	0-1						

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	(6) Rotational-speed limitat. Note: changed to ...) rev/min (3)	(3a) Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery idle (5): rev/min (6)	cm³/1000 strokes (7)	(4a) Idle stop: rev/min (8)	Control rod travel mm (9)
Pump .. S15Z with governor 300-1100 P1/303 (5 - variable for 346/355*) approx. 10 mm control-rod travel				1020 (EP/RSV)				
*(Full load - and possibly speed limitation - is stamped onto the nameplate of the governor!)								

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 13,8 b 2

1. Edition

En

PE 6 P 100 A 420 LS 89 RSV 250-1000 P 7/304 R

Komb.-Nr. 0 401 876 099

Note VDT-I-401/103

supersedes –

company KHD

engine F 6 M 716

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	14,9+0,1	15,2-15,4	0,35(0,6)			
250	8,9-9,1	1,8-2,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	250	8,5	-	-
	X = 5,0						250	8,9-9,1		
ca.68 (2a)	13,9	1040-1050					530-590	=2,0		
	4,0	1145-1175								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take from VDT-I-401/103		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

L8

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 FIA 13,8 a
9. Edition
En

PE 6 P 120 A 720 RS 167 RQ 225/1100 PA 118 R
Komb.-Nr. 0 401 846 225
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 3.83
company: Fiat
engine: 221 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,1+0,1	17,0-17,3	0,5(0,9)			
225	7,5-7,7	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,1	1145-1160	225	7,6	100	min. 9,1	1100	11,1-11,2
				4,0	1190-1220			225	7,5-7,7	600	11,1-11,3
				1350	0-1,0			365-405	= 2,0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel. 7
1100	170,0-173,0 (167,0-176,0)	-	-	-	100	19,0-21,0

Checking values in brackets

7.83

L9

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 FIA 13,8 a 4
3. Edition
En

PE 6 P 120 A 720 RS 167 Z RQ 225/1100 PA 118 R
Komb.-Nr. 0 401 846 345
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 3.83
company: Fiat
engine: 221 A
210 kW (286 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,3+0,1	16,3-16,6	0,5(0,9)			
225	7,5-7,7	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	9,3	1145-1160	225	7,6	100	min. 9,1	1100	10,3-10,4
				4,0	1185-1215			225	7,5-7,7	550	10,3-10,5
				1300	0-1,0			365-405	= 2,0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel 7
1100	163,0-166,0 (160,0-169,0)	-	-	-	100	19,0-21,0

Checking values in brackets

7.83

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 40,5 c 7
2. Edition
En

PE 8 P 130 A 920/5 RS 293-1 RSUV 300-1000 P 0 A 352
1- 6- 4- 5 - 8 - 3 - 2 - 7
0-75-90-120-210-225-315-345° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 6.85 KHD
company BA 16 M 816
engine Komb.-Nr. 0 401 878 115

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.22	300	5,7	1000	13,5-13,6
	x = 2,0						300	6,1-6,3	280	14,7-15,3
ca.66 (2a)	12,5	1040-1050					325-385	=2,0	450	13,5-13,6
	4,0	1060-1090								
	1225	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request. Pumps operates in tandem.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 k 2

En

1. Edition

PE 12 P 130 A 920 RS 294-1 RSUV 300-1000 POA 348 R
Komb.-Nr. 0 401 870 078
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company KHD
engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	–	–	–	ca. 22	300	5,7	1000	13,5-13,6
	x = 4,0								280	14,7-15,3
							300	6,1-6,3	450	13,5-13,6
ca. 66 (2a)	12,5	1040-1050					330-390	= 2,0		
	4,0	1065-1095								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	–	–	–	–	–	–

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

L12

L12

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 KHD 30,4 k 3

1. Edition

En

PE 12 P 130 A 920 RS 294-1 RSUV 300-750 P9A 350 R
Komb.-Nr. 0 401 870 077
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5±0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	300	5,7	-	-
	x = 4,0						300	6,1-6,3		
ca. 62 (2a)	12,5	790-800					330-390	= 2,0		
	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat (Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

L13

L13

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 k 4

1. Edition

En

PE 12 P 130 A 920 RS 294-1 RSUV 300-1000 POA 352
Komb.-Nr. 0 401 870 078
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,5+0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,7	1000	13,5-13,6
	x = 2,0								280	14,7-15,3
							300	6,1-6,3	450	13,5-13,6
ca. 66	12,5	1040-1050					325-385	= 2,0		
(2a)	4,0	1060-1090								
	1225	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

L14

L14

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 30,4 1

1. Edition

En

PE 12 P 130 A 920 RS 294-1 RS 250/1000 P1A 422 R

Komb.-Nr. 0 401 870 075

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –

company KHD

engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0			
250	6,2-6,4	2,0-2,6 (1,7-2,9)	1,0 (1,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	–	–	–	ca. 23	250	6,2	1000	13,5-13,6
	x = 5,0								400	14,7-15,3
							250	6,1-6,3	550	13,5-13,6
VH ca. 57	12,5	1040-1050					400-460	= 2,0		
FH max.	4,0	1095-1125				150-200				
(2a)	1260	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	–	–	–	–	–	–

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

Test Specifications Fuel Injection Pumps and Governors (1A)

40
WPP 001/4 KHD 15,2 b 2
1. Edition

En

PE 6 P 120 A 420 LS 324 RSV 250-1000 P 7/304 R

supersedes KHD
company:
engine: BA 6 M 816

Komb.-Nr. 0 401 876 202

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9 (29,3-30,1)	0,5(0,9)			
250	6,0-6,2	2,0-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 24	250	5,6	1000	14,9-15,0
	x = 5,5						250	6,0-6,2	300	16,2-16,8
							345-405	=2,0	450	14,9-15,0
ca.67	13,9	1040-1050								
(2a)	4,0	1080-1110								
	1250	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

L16

L16

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 15,2 f

1. Edition

En

PE 6 P 130 A 420 LS 324-1 RSV 250-1000 P7A 304

supersedes -

company KHD

engine BA6 M 816

Komb.-Nr. 0 401 876 281
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,4-36,4)	0,6(1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca.22	250	5,7	1000	13,5-13,6
	x = 5,0						250	6,1-6,3	300	14,7-15,3
ca.64	12,5	1040-1050					330-390	=2,0	450	13,5-13,6
(2a)	4,0	1065-1095								
	1225	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 15,2 c1

1. Edition

En

PE 6 P 130 A 420 LS 324-1 RS 250/1000 P 1 A 422 R

supersedes: -

company: KHD

engine BA 6 M 816

Komb.-Nr. 0 401 876 280

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW= 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	FHca.23	250	6,2	1000	13,5-13,6
	x = 5,0						400-460=2,0		400	14,7-15,3
VHca.57 FH-full (2a)	12,5	1040-1050							550	13,5-13,6
	4,0	1095-1125				150-200				
	1260	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

L18

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 a

1. Edition

En

PE 8 P 120 A 620/4 LS 325 RSUV 250-600 P 8 A 321 R
1-4-7-6-8-5-2-3 je 45° ± 0,50 (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company: KHD
engine BA 8 M 816 Komb.-Nr. 0 401 878 103

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	14,9+0,1	28,7-29,1 (28,4-29,4)	0,5(0,9)			
250	6,0-6,2	1,6-2,3 (1,3-2,6)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	775	0,3-1,0	–	–	–	ca.25	250	5,6	600	14,9-15,0
	X = 4,0						250	6,0-6,2	220	16,2-16,8
							260-320	= 2,0	350	14,9-15,0
ca.65 (2a)	13,9	640-650								
	4,0	660-690								
	800	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Adjust according to		640-650 * the engine	– records.	–	100	19,5-21,0 mm RW	–	–

Checking values in brackets

* 1 mm less control rod travel than col 2

6.83

L19

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 b 1
En 2. Edition

PE 6 P 120 A 321 RS 438 RQV 275-1200 PA 648
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 1.83
company: RVI
engine: MID 062045
Komb.-Nr. 0 401 856 153

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,2+0,1	13,4-13,7	0,5(0,9)			
275	5,9 - 6,1	0,7-1,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 11	100	min. 7,5	250	0-0,9
							275	5,9-6,1	570	4,7-5,0
ca. 65	10,2	1240-1250							880	6,1-6,3
	4,0	1335-1365				270-365			1200	8,3
	1500	0-1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	134,0-137,0 (131,0-140,0)	1240-1250*	-	-	100	180,0-200,0	-	-
					275	7,0-13,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

L20

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 10,6 a
2. Edition
En

PES 4 P 120 A 320 RS 451 RQV 350-900 PA 618
Komb.-Nr. 0 402 044 020
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 1.83
company: Baudouin
engine: DNP 4
107 kW (145 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,6+0,1	19,7-19,9	0,5(0,9)			
350	7,6-7,8	2,8-3,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	940	15,2-17,8	-	-	-	ca.30	100	min.9,2	325	1,1-1,3
ca. 60	11,6	940-950					350	7,6-7,8	500	3,1-3,8
	4,0	1000-1030							750	6,0-6,4
	1150	0-1,0				350-440 (3a)			900	8,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	197,0-199,0 (194,0-202,0)	940-950*	-	-	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.83

L21

Test Specifications Fuel Injection Pumps and Governors (1)

WPP 001/4 BAO 13,2 a
2. Edition
En

PES 5 P 120 A 320 RS452 RQV 350-900 PA 618

supersedes 2.83

1 - 2 - 4 - 5 - 3 je 72° ±0,5° (±0,75°)

company: Baudouin

engine: DNP 5

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 Komb.-Nr. 0 402 045 025

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,6+0,1	19,7-19,9	0,5(0,9)			
350	7,6-7,8	2,8-3,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	940	15,2-17,8	-	-	-	ca.30	100	min.9,2	325	1,1-1,3
ca.60	11,6	940-950					350	7,6-7,8	500	3,1-3,8
	4,0	1000-1030							750	6,0-6,4
	1150	0-1,0				350-440			900	8,0
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	197,0-199,0 (194,0-202,0)	940-950*	-	-	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

L22

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 c
2. Edition
En

PE 6 P 120 A 321 RS 359 RQV 275-1200 PA 538
Komb.-Nr. 0 401 856 148
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 4.81
company: RVI
engine: MID 06.20.30
140 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,5-9,6	13,0-13,2	0,5(0,9)			
275	4,6-4,8	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1280	15,2-17,8	-	- -	- -	ca. 9 (3a)	100	min. 6,2	275	1,1-1,3
ca. 63	8,5	1240-1250					275	4,6 - 4,8	950	5,6-5,8
	4,0	1300-1330							1200	7,6-7,8
	1450	0-1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1200	130,0-132,0 (127,0-135,0)	1240-1250*	-	-	100	190,0-210,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

L23

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 18,2 b
1. Edition
En

PE 10 P 120 A 520/4 LS 3830 RQV 250-1150 PA 668-7
1- 8 -7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° ±0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company: MAN
engine: D 2840 LE
463 kW
MAN-Nr. 2-7668
Komb.-Nr.
0 401 849 715

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,2-4,3 (4,15-4,35) mm (from BDC) Cyl.10; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,2+0,1	20,5-20,7	0,5 (0,9)			
250	7,0-7,2	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min. 8,6	350	2,0-2,4
ca. 66	11,2	1190-1200					250	7,0-7,2	750	6,1-6,3
	4,0	1340-1370					405-465=2,0		1150	8,6
	1450	0 - 1,0				(3a)				

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1150	205,0-207,0 (202,0-210,0)	1190-1200 *	-	-	100	190,0-210,0 (186,0-214,0)	-	-
					250	17,0-23,0 (14,0-26,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.80